Dean of Faculty

UNIVERSITY OF SANTA CLARA

Catalogue for the Eighty-Third Year
1933-1934

ANNOUNCEMENTS 1934-1935

University of Santa Clara

▼

COLLEGE OF ARTS AND SCIENCES

This College offers major courses in the Departments of Economics, English, History, Philosophy, Political Science, Biology and Chemistry leading to the Bachelor's degree.

Courses in the College of Arts and Sciences are approved by the American Medical Association for entrance to medical school.

COLLEGE OF BUSINESS ADMINISTRATION

A four-year course leading to the degree of Bachelor of Commercial Science.

COLLEGE OF ENGINEERING

Four-year courses in Civil, Electrical and Mechanical Engineering.

COLLEGE OF LAW

A three-year full time day law course leading to the degree of Bachelor of Laws, following three years' pre-legal work in the College of Arts and Sciences.

For Catalogue of the University
Address
The Registrar
University of Santa Clara, Santa Clara, California

University of Santa Clara

CATALOGUE
FOR THE EIGHTY-THIRD YEAR
1933-1934

•

ANNOUNCEMENTS 1934-1935

•

To mould men after the model of the Man-God, and thus form them to serve their fellow men, their country and their God; this is the ideal and the purpose of the University of Santa Clara.

Member Northwest Association of Secondary and Higher Schools.

PUBLISHED BY THE UNIVERSITY OF SANTA CLARA
SANTA CLARA, CALIFORNIA
APRIL, 1934

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The Corporate Title of the University is

THE PRESIDENT AND BOARD OF TRUSTEES OF SANTA CLARA COLLEGE

BOARD OF TRUSTEES

JAMES JOSEPH LYONS
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THE PRESIDENT THE SECRETARY

CLARENCE C. COOLIDGE, Esq.

CONSULTING ATTORNEY

CLARENCE C. COOLIDGE, Esq.

CALENDAR

▼

First Semester—1934

	S	M	T	W	T	F	S	
Aug.				1	2	3	4	
	5	6	7	8	9	10	11	Registration—Examinations to remove conditions.
	12	13	14	15	16	17	18	Instruction in all departments—Feast of the Assumption (a holiday).
	19	20	21	22	23	24	25	Close of registration—Mass of the Holy Ghost.
Sept.	26	27	28	29	30	31	1	
	2	3	4	5	6	7	8	Students' Retreat.
	9	10	11	12	13	14	15	Admission day (a holiday).
	16	17	18	19	20	21	22	
	23	24	25	26	27	28	29	Examinations.
Oct.	30	1	2	3	4	5	6	Examinations.
	7	8	9	10	11	12	13	Last day to submit subjects for Senior Theses and Sophomore Essays.
	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	
Nov.	28	29	30	31	1	2	3	Examinations—All Saints' Day (a holiday).
	4	5	6	7	8	9	10	Examinations.
	11	12	13	14	15	16	17	Mass for deceased Faculty and Alumni.
	18	19	20	21	22	23	24	
Dec.	25	26	27	28	29	30	1	Y. M. I. Intercollegiate Oratorical Contest—Thanksgiving Recess.
	2	3	4	5	6	7	8	Dramatic Art Contest—Feast of the Immaculate Conception.
	9	10	11	12	13	14	15	Final Examinations.
	16	17	18	19	20	21	22	Final Examinations — Christmas Recess.
	23	24	25	26	27	28	29	Christmas Recess.
	30	31						Christmas Recess.

Second Semester—1935

	S	M	T	W	T	F	S	
Jan.			1	2	3	4	5	Registration.
	6	7	8	9	10	11	12	Instruction in all departments.
	13	14	15	16	17	18	19	Close of registration — Examinations to remove conditions.
	20	21	22	23	24	25	26	
Feb.	27	28	29	30	31	1	2	Owl Oratorical Contest — Senior Theses and Sophomore Essays due.
	3	4	5	6	7	8	9	
	10	11	12	13	14	15	16	Examinations.
	17	18	19	20	21	22	23	Examinations.
Mar.	24	25	26	27	28	1	2	
	3	4	5	6	7	8	9	
	10	11	12	13	14	15	16	
	17	18	19	20	21	22	23	Examinations—Prize Essays due.
	24	25	26	27	28	29	30	Examinations.
Apr.	31	1	2	3	4	5	6	
	7	8	9	10	11	12	13	President's Day (a holiday).
	14	15	16	17	18	19	20	Easter Recess.
	21	22	23	24	25	26	27	Easter Recess—Ryland Debate.
May	28	29	30	1	2	3	4	Written Examinations for Seniors.
	5	6	7	8	9	10	11	Oral Examinations for Seniors—Commencement.
	12	13	14	15	16	17	18	Final Examinations.
	19	20	21	22	23	24	25	Alumni Banquet.
	26	27	28	29	30	31		

Coolidge Competition

OFFICERS OF ADMINISTRATION AND INSTRUCTION

JAMES JOSEPH LYONS, S. J.
President

JOSEPH RANDALL CROWLEY, S. J.
Vice-President, Director of Discipline

WILLIAM CHARLES GIANERA, S. J.
Dean of the Faculties, Director of Studies

CLARENCE CHARLES COOLIDGE
Law
Dean of the College of Law
A. B., Santa Clara, 1891, J. D., 1910. Admitted to practice, 1894. Dean of the College of Law since 1920. At Santa Clara since 1909.

EDWIN JOHN OWENS
Law
Acting Dean of the College of Law
A. B., Holy Cross, 1919; LL. B., Harvard, 1922. Admitted to practice, Massachusetts, 1922; United States District Court, 1927. Professor of Law, Boston College, 1928-33. At Santa Clara since 1933.

GEORGE LEONARD SULLIVAN
Engineering
Dean of the College of Engineering
B. Sc. in M. E., University of Nebraska, 1908; M. E., University of Colorado, 1910; Ph. D., Santa Clara, 1914. Instructor in Mechanical Engineering, University of Colorado, 1908-11; Assistant Professor of Mechanical Engineering, Montana State College, 1911-12; Phelps-Dodge Corporation, 1918 (on leave from Santa Clara). Dean of the College of Engineering since 1918. At Santa Clara since 1912.

EDWARD JOHN KELLY
Accounting
Dean of the College of Business Administration
B. S., California, 1924; C. P. A., State of California, 1929. Lecturer in Accounting, University of San Francisco, Evening Division, School of Commerce, 1929- . Dean of the College of Business Administration since 1929. At Santa Clara since 1925.

HUGH COLUMBUS DONAVON, S. J.
Ethics

EDWARD ALEXANDER AMARAL, M. D.
Visiting Physician

HUNTER SHERMAN ARMSTRONG
Law
LL.B., University of Cincinnati, 1885; A.B., Marietta College, 1889; LL. D., Santa Clara, 1930. Admitted to practice, Ohio, 1886; California, 1930. General law practice, 1891-1910; Solicitor, Law Department, Pennsylvania Railway Company, 1910-27. At Santa Clara since 1927.

EUGENE MICHAEL BACIGALUPI, S. J., Ph. D.
Physics

JAMES MARIUS BECCHETTI
Commercial Law
A. B., Santa Cara, 1925, LL. B., 1926. At Santa Clara since January, 1930.

EDWARD RICHARD BOLAND, S. J.
History

LLOYD LAWRENCE BOLTON
Biology
B. A., University of British Columbia, 1922, M. A., 1924; Ph. D., Cornell, 1932. Assistant in Biology, University of British Columbia, 1922-24; Graduate Student, University of Toronto, 1924-26; Research Assistant, International Fisheries Commission, Seattle, 1926-27; Assistant in Histology and Embryology, Cornell, 1927-28 and 1931-32; Instructor in Biology, University of Saskatchewan, 1928-29; Instructor in Zoölogy, University of Washington, 1929-31. At Santa Clara since 1932.

DAVID M. BURNETT
Law
B. S., St. Ignatius College, 1891; LL. D., Santa Clara, 1930. Admitted to practice, 1895. Instructor in Mathematics, St. Ignatius College, 1892-93; Instructor in English and Mathematics, Santa Clara, 1894-95, in Elementary Law, 1907-09. Member Board of Governors, California Bar Association, 1928-31. At Santa Clara since 1931.

JOHN MAY BURNETT
Law
A. B., Santa Clara, 1925, LL. B., 1926. Admitted to practice, 1926. At Santa Clara since 1928.

LLOYD ROBERT BURNS, S. J.
Religion

LAUREN WILDE CASADAY
Economics
A. B., University of California at Los Angeles, 1927; graduate student and Teaching Fellow in Economics, University of California at Berkeley, 1928-31. At Santa Clara since January, 1932.

ARTHUR VINCENT COGHLAN, S. J.
Philosophy

LAWRENCE HARVEY COOK
Organic Chemistry
A. B., Stanford, 1921, A. M., 1922; Ph. D., Santa Clara, 1931. Engineering Officer, U. S. Navy, 1918-20. At Santa Clara since 1927.

GEORGE T. CROWLEY, S. J.
Assistant in English

WILFRED H. CROWLEY, S. J.
Latin

CORNELIUS FRANCIS DEENEY, S. J., Ph. D.
Political Science

WILLIAM ABBOTT DILL
Zoölogy
A. B., Stanford, 1930; Graduate Student, Hopkins Marine Station, since 1930. At Santa Clara since January, 1932.

WILLIAM E. DONNELLY, S. J.
Philosophy

WILLIAM J. DUNNE, S. J.
Pedagogy

HARLAN HEBE DYKES
Law
A. B., Stanford, 1921; LL. B., St. Ignatius College, 1925; J.D., Santa Clara, 1930. Admitted to practice, 1927. Director of Physical Education, Lowell High School, San Francisco, 1922-26. At Santa Clara since 1926.

AUSTIN JOSEPH FAGOTHEY, S. J.
Philosophy

WILLIAM J. FINNEGAN, S. J.
Greek

EDMUND CLARENCE FLYNN
Engineering
B. S. in C. E., Colorado College, 1919; M. S., Iowa State College, 1925. Assistant Professor (Highway Engineering and allied subjects), Iowa State College, 1921-30. At Santa Clara since 1930.

HUBERT J. FLYNN, S. J.
Philosophy

JOHN DENNIS FOLEY
Commercial Law
A. B., Santa Clara, 1930, LL. B., 1932. Admitted to practice, 1932. At Santa Clara since 1933.

PAUL FRANCIS GALTES, S. J.
Chemistry

FREDERICK C. GERLACH, M. D., LL. D.
Visiting Physician and Surgeon.

GEORGE ALDEN GILBERT, S. J.
Mathematics

MARTIN CHRISTOPHER GLAVINA
German
A. B., California, 1926, A. M. 1928; Student, School of Education, University of California, 1929-30. Teaching Assistant, University of California, 1923-24. At Santa Clara since 1930.

JOHN JOSEPH HAYES, S. J.
Secretary and Treasurer

*BERNARD ROSECRANS HUBBARD, S. J.
Geology

LOUISE MARY JENKS
Assistant Librarian

DENNIS KAVANAGH, S. J.
Philosophy

LOUIS E. KERN, S. J.

JOSEPH J. KING, S. J.
Classical Literature

WALTER KROPP, S. J.
Latin

HENRI LECAT
French
Elementary Brevet, Boulogne-sur-Mer, France, 1892; Superior Brevet, Paris, 1893. Professor in France, 1892-94; Private Teaching, St. Albans, Vt., 1894-96, San Francisco, 1896-1919. At Santa Clara since 1919.

JAMES E. MALONE, S. J.
Classical Literature

RALPH HENRY MARTIN
Spanish
Assistant to the Dean of the Faculties
Student, Santa Clara, 1913-15; Stanford, 1915-17, Summer 1926 and 1927. At Santa Clara since 1926.

FENTON JOHN McKENNA
Dramatics, Public Speaking
Ph. B., Santa Clara, 1928, LL. B., 1930, J. D., 1933. Instructor in English and Public Speaking, Bellarmine College Preparatory, San Jose, 1928-30. At Santa Clara since 1930.

ALBERT JOSEPH NEWLIN
Associate in Meteorology and Seismology
B. S., Santa Clara, 1913, LL. B., 1914, J. D. 1916. At Santa Clara since 1918.

*On leave of absence during the year 1933-34.

JOSEPH D. O'BRIEN, S. J.
Philosophy

UMBERTO OLIVIERI
Italian
B. A., Royal Lyceum Ennio Quirino Visconti, Rome, 1903; Doctor of Laws, University of Rome, 1910. Professor of English Language and Literature, University of Rome, 1920. At Santa Clara since 1932.

BARTHOLOMEW L. O'NEILL, S. J.
English

ERNEST FREDERICK PETERSON
Engineering
B. S. (E. E.), University of Colorado, 1916, M. S. (E. E.), and E. E., 1928. Instructor in Electrical and Mechanical Engineering, University of North Dakota, 1919-20; Instructor in Engineering Mathematics, University of Colorado, 1924-29; Instructor in Electrical Engineering, Valparaiso University, 1929-30. At Santa Clara since 1930.

ALBERT JOHN RUFFO
Assistant Director of Football
B. E. E., Santa Clara, 1931. At Santa Clara since 1931.

JOSEPH WILLIAM SCHAECHTEL, S. J.
Assistant in Chemistry

GEORGE JOSEPH SCHELCHER
Registrar
A. B., Santa Clara, 1932. At Santa Clara since 1932.

EDGAR CHARLES SCHOTT
Engineering
B. S. in C. E., Santa Clara, 1926. Assistant Resident Engineer, California Bridge & Tunnel Co., 1926-27; Assistant City Engineer, Petaluma, California, 1927-29, Santa Clara, California, 1929-32. At Santa Clara since February, 1930.

DONALD SHAM
Economics
A. B., University of Redlands, 1927; A. M., California, 1930. Fellow, Department of Economics, University of California, 1928-30; Lecturer, University of California Extension, since 1930. At Santa Clara since 1930.

LAWRENCE TIMOTHY SHAW
Assistant Director of Football
B. S., University of Notre Dame, 1922. Assistant Director of Physical Education, University of Nevada, 1922-1923; Director of Football and Track, North Carolina State College, 1924; Director of Football, University of Nevada, 1925-1928. At Santa Clara since 1928.

FRANCIS LOUIS SHEERIN, S. J., S. T. D.
Philosophy

EDWARD SHIPSEY, S. J.
English

MAURICE JOSEPH SMITH
Director of Football
LL. B., University of Notre Dame, 1920. Instructor in Political Science and History, Columbia University (Portland, Oregon), 1921-24; Instructor in Law, Gonzaga University (Spokane), 1925-29. At Santa Clara since 1929.

ARTHUR SPEARMAN, S. J.
Religion

CLEMENS VAN PERRE
Director of Band and Orchestra
Graduate, Athenæum of Antwerp (Belgium), 1911; Graduate, Royal Conservatory, Antwerp, 1913; Graduate student, University of Louvain, 1913-14. Bandmaster, U. S. Army, 1917-19; Director of Music, Mt. Angel College (Oregon), 1920-25; Columbia University (Portland), 1925-32. At Santa Clara since 1932.

*CHARLES J. WALSH, S. J.
English

HENRY WALSH, S. J.
English

ROBERT WILLIAM WARD
Chemistry
B. S., St. Ignatius College, 1928. Graduate student, Stanford, 1929; St. Ignatius College, 1930. At Santa Clara since 1930.

ALVIN JOSEPH WOLF
English
A. B., Santa Clara, 1928, A. M., 1930. At Santa Clara since 1930.

HENRY WOODS, S. J., Ph. D.
Emeritus Professor of Ethics
Librarian

*On leave of absence during the year 1933-34.

FACULTY COMMITTEES

ATTENDANCE—The Director of Studies and the Director of Discipline.

CREDENTIALS AND REGISTRATION—The Director of Studies, Deans of the various Colleges, and the Director of Discipline.

DISCIPLINE—The Director of Discipline and the Director of Studies.

DRAMATICS AND PUBLIC EXERCISES—The President, the Director of Studies, the Director of Discipline, and the Director of Dramatics.

EXAMINATIONS—The President, the Director of Studies, and the Professors of the various courses.

POST-GRADUATE STUDIES—The President, the Director of Studies and the Professors of the subjects in which the Post-Graduate work is taken.

SCHOLASTIC STANDING—The Director of Studies and the Deans of the several Colleges.

STUDENT ORGANIZATIONS—The Director of Studies, the Director of Discipline and the Director of each organization.

STUDENT PUBLICATIONS—The Director of Studies, the Director of Discipline and the Faculty Moderator.

THESES—The Director of Studies and the Professors of the Upper Division Courses.

ATHLETICS—**Board of Athletic Control.** The President, a member of the faculty chosen by the President, and three members of the Alumni Association also chosen by the President.

Advisory Board of Athletics. Nine members of the Alumni Association.

Auxiliary Athletic Board. A member of the faculty and three members of the Associated Students ap-

GENERAL INFORMATION

LOCATION

The University of Santa Clara, conducted by the Jesuit Fathers, is situated at Santa Clara on the site of the old Mission, in the southern part of the San Francisco metropolitan district and immediately adjacent to San Jose. Frequent railroad, street-car and bus service provides easy access to the various Bay cities, and direct connections to all parts of California and the West.

The valley of Santa Clara is famous throughout the world for the beauty of its scenery, the salubrity of its climate, and the excellence of its fruits. The climate is mild and equable both in summer and winter, and on that account singularly favorable for persistent study and research as well as for the maximum of agreeable out-of-doors recreation which such work makes necessary.

HISTORY

Mission Santa Clara. On January 12, 1777, two Franciscan Padres, de la Pena and Murguia, planted the Mission Cross and laid the foundations of Mission Santa Clara on the banks of the Guadalupe, about a mile and a half from the University grounds. Two years later a flood destroyed both church and monastery, and the Padres in consequence removed the Mission to the second site, two blocks from the present church. There, on November 9, 1781, they laid the foundation of a large adobe church and mission buildings. Three years later, on May 15, 1784, the new church was dedicated by the Venerable Padre Serra, then Padre Presidente of the Missions of California.

Owing to damage by earthquakes in 1812 and 1818 the Padres were forced to build anew and this time selected the site of the present Mission. There, on August 11, 1822, a still larger church was dedicated. With the passing of time the original church was largely rebuilt, though the chancel and the interior arrangements remained substantially as originally constructed. In October, 1926, the Mission was destroyed by fire and rebuilt in 1927, along the lines of the original structure. This new Mission was dedicated in 1928. The restoration of the Mission was made possible by the generosity of friends in the Santa Clara Valley as well as friends and Alumni of the University throughout the State of California.

In 1836 Mission Santa Clara was secularized and passed from the hands of the devoted Padres into those of politicians, who robbed the Mission of her lands and oppressed or drove away her children. When Rt. Rev. Joseph Sadoc Alemany, O. P., arrived as Bishop of the Diocese of San Francisco in 1850, he found only one Franciscan in charge of the Mission, which had been restored by the American government, though in a sadly reduced form.

Santa Clara College. Desiring to save the remnants of the Mission, and also to start a college to meet the growing need of the times, the Bishop invited the Society of Jesus to Santa Clara. The

invitation was accepted, and accordingly on March 19, 1851, Father John Nobili laid the foundation of Santa Clara College.

He adapted the old adobe buildings to the requirements of a college. On April 28, 1855, the institution was chartered a University and continued to be known as Santa Clara College until 1912. It is the oldest institution of higher learning in the west. In 1857 the degree of A. B. was conferred on Thomas I. Bergin, the first to receive that degree from any California college.

During the subsequent years the College grew in influence and attendance. Several large new buildings were added, and for many years Santa Clara College, in both equipment and scholastic standing, ranked as the leading educational institution in the west. In its sixty years of existence as a college over seven thousand students were matriculated.

THE UNIVERSITY. In 1907 lectures were commenced with a view of preparing students to enter upon the professional courses in law, medicine and engineering. In 1911 the pre-medical course was established and the law school begun. Realizing, therefore, that the College was practically doing the work of a university, the President, Father James P. Morrissey, S. J., and the Board of Trustees adopted officially the name of "The University of Santa Clara," this decision going into effect on April 29, 1912.

In the summer of 1912, engineers of high standing were engaged to carry on the courses in engineering, and in the next summer a thoroughly equipped laboratory for engineering was prepared. In the same year the amount of work required of law students was increased and the classes in Law were thenceforth held at night.

The outbreak of the War suspended the plans for expansion and it was not until after its close that they were resumed. In 1923 an extensive building program was commenced, with a view to provide an adequate material basis for the University, and during the following years there has been added a group of new buildings, including Alumni Science Hall, 1923; Montgomery Laboratories, Seifert Gymnasium, Kenna Hall and the Service Building, 1924; Donohoe Infirmary, 1925; the remodeling of the Auditorium in 1926; the Ricard Memorial Observatory, the Seismological and Meteorological Stations, the New Mission Church in 1928, Nobili Hall in 1930, and the Varsi Library in 1931.

Accompanying the Building Program there has come a corresponding growth in attendance and scholastic work. In 1923 the Pre-Medical course was restored, and a four year College of Business Administration added. In 1925 the College of Law was increased to four years; and the Preparatory Department transferred to a separate campus on the former property of the College of the Pacific at College Park, San Jose. In 1926 the University celebrated its Diamond Jubilee and with enlarged facilities and equipment has entered upon a program of greater service to the Church and state. In August, 1929, plans were formulated whereby the standing of the College of Law would be greatly increased. Since August, 1930, all classes in the College of Law previously held at night have been taught under the new plan as morning classes. This plan put the College of Law on a basis more in accordance with the standards of the American Bar Association.

SYSTEM OF EDUCATION

The Jesuit system of education aims at developing side by side the moral and intellectual faculties of the student, at sending forth to the world men of sound judgment, of acute and rounded intellect, of upright and manly conscience. And since men are not made better citizens by the mere acquisition of knowledge, without a guiding and controlling force, the principal faculties to be developed are the moral faculties. Moreover, morality is to be taught continuously. It must be the underlying base, the vital force supporting and animating the whole organic structure of education. It must be the atmosphere the student breathes. It must suffuse with its light all that he reads, illuminating what is noble and exposing what is base, giving to the true and false their relative light and shade.

Because of its conservative system of education, its solid philosophical system and the highly specialized training required of those who qualify as professors, the University of Santa Clara is particularly prepared to train leaders of men.

Though the Catholic Religion is the religion professed by the Faculty and by the larger number of the students, members of all religions are admitted provided they are willing, for the sake of order and uniformity, to conform respectfully to the religious observances of the University.

GROUNDS AND BUILDINGS

The Campus. The University occupies a well laid out campus of approximately fifteen acres facing the Alameda, on El Camino Real from San Francisco to Los Angeles—the site of the third Mission Santa Clara. The buildings are grouped in a series of quadrangles around the Mission church in accordance with the Campus Plan prepared by Mr. John J. Donovan, which provides for a continuation of the original Mission style.

Mission Santa Clara, built in 1822, and the Students' Chapel, built in 1887, were destroyed by fire on October 25, 1926. Through the generosity of Alumni and friends of the University, a new Mission Church, a replica of the original church, stands on the former site, the heart and center of University activities. It serves as the Students' Chapel and enshrines the priceless relics of the old Mission rescued from the fire by the heroic efforts of the Faculty and students.

Bergin Hall, built in 1911 to replace the old Fathers' Building destroyed by fire in 1909, is a gift to Alma Mater of her first graduate, Hon. Thomas I. Bergin, A. B. '57. It contains the administrative offices of the University, reception rooms, residences of the Fathers and Scholastics, and the Library.

O'Connor Hall, built in 1912, is the gift of Mr. and Mrs. Myles P. O'Connor. On the first floor are the class-rooms of the College of Arts and Sciences and of the College of Law. The second and third floors contain private rooms for the upper class-men. In the basement are the coöperative bookstore and recreational facilities of the Associated Students, and the Paleontological and Geological Museums.

The Theatre, originally built in 1870 and completely reconstructed in 1926, is one of the largest theatres for amateur productions in the West, and has been the scene of such notable dramatic productions as the Passion Play and the Mission Play of Santa Clara.

Alumni Science Hall, built in 1924, is the gift of the Alumni of Santa Clara and contains offices and class rooms of the College of Engineering; the lecture rooms and laboratories of the Departments of Biology, Chemistry and Physics; and the electrical equipment service rooms.

Robert E. Kenna Hall, erected in 1924, is dedicated to Rev. Robert Emmet Kenna, S. J., student, professor and twice president of Santa Clara College. On the first floor are the offices, class rooms, laboratories and library of the College of Business Administration; and class rooms for the lower division classes. The two upper floors contain private rooms for the lower division students.

Montgomery Laboratories, erected in 1924, are dedicated to John J. Montgomery, "Father of Aviation," one time Professor of Physics in the University. On the first floor are the forge, wood-working and pattern-making, materials testing, mechanical, and electrical laboratories of the College of Engineering, together with office and lockers for laboratory classes. In 1930 a second story was added, in which are contained drawing and lecture rooms for Engineering students.

Seifert Gymnasium, erected in 1924, is a bequest of the late Dr. George W. Seifert, B. S. '79. It houses the plunge (40x100x10), the basketball court (65x100), locker rooms for Varsity and class teams, music rooms and students' lounging room, and is the center of social life at the University.

The Service Building, erected in 1924, houses the laundry, power and heating plant, and service rooms. The second floor provides a dormitory for employees.

Donohoe Infirmary, erected in 1925, is the gift of Miss Katherine Donohoe in memory of her father and mother, James and Rose Donohoe. It is a complete small hospital, with private rooms and ward, diet kitchen, dispensary, operating room, chapel, and offices for the infirmarian and visiting physician.

The Ricard Memorial Observatory is the gift of the Knights of Columbus of California to the "Padre of the Rains." This building, with its three domes, houses the telescopes, the spectroheliograph and other instruments. An underground passageway connects the vault of the Seismic Station to the Observatory. The new Seismic Station contains the 80Kg Wiechert Horizontal and Vertical Seismographs, three new Galitzin Seismographs of the long range type and the two new Wood-Anderson Seismographs, especially designed for local earthquakes. A specially constructed clock niche in the vault will contain a "Shortt Synchronome Clock" and will be kept at a constant temperature by means of a highly sensitive thermostatic control. The Observatory likewise houses the other necessities of a station of this type, such as battery rooms, photographic dark rooms and offices where records are kept for study and reference.

Nobili Hall, erected in 1930, is dedicated to the Rev. John Nobili, S. J., the first president of the University. On the first floor are the refectories for the Fathers, lay faculty, students, guests and employes; kitchens and service rooms. The second floor contains rooms for the lay professors as well as for the students. The third and fourth floors have rooms reserved entirely for students.

The Library. Construction of Varsi Library commenced on March 12, 1931 and the building was dedicated on October 10, 1931. The first floor has private study rooms for the Faculty, departmental reading rooms, offices of the librarians, students' reading room and stack room. In the stack room provision is made for 120,000 volumes, allowing for expansion. The main reading room affords simultaneous accommodations for one hundred and seventy-five readers. The second floor over the offices is for the exclusive use of the Law Library and contains reading rooms for students in the College of Law. The Library was made possible through the generosity of a distinguished alumnus of Santa Clara. It was named the Varsi Library in honor of the sixth President of Santa Clara, a life-long friend of the donor.

LABORATORIES

The laboratories of the departments of Biology, Chemistry and Physics are located on the three floors of the Alumni Science Hall.

The laboratories of the College of Engineering are located in the Montgomery Laboratories and provide complete laboratory facilities for engineering courses.

The Astronomical, Seismological and Meteorological laboratories are located in the Observatory group.

ENDOWMENT AND NEW BUILDINGS

The growth in the number of students and the work of the University has made it imperative that adequate buildings and endowment be provided. For this, and in order that Santa Clara may widen its scope as an educational institution of recognized standing, funds are necessary. Santa Clara stands in imperative need of an endowment. The work the University has accomplished in the past is an earnest of what she will do when increased facilities are afforded her.

An endowment, however, implies a founder or founders and benefactors. During the past few years, many have helped the University and generous donations have been made. The new Mission Church, the Donohoe Infirmary, Bergin, O'Connor, and Alumni Science Halls, Seifert Gymnasium, Ricard Memorial Observatory, Nobili Hall and Varsi Library are inspiring examples of such support.

But before other buildings, for which the plans of the University provide, may be added, further benefactions will be needed. Other institutions, even those state-aided and richly endowed, receive generous assistance in their work and hesitate not to ask for it. Santa Clara feels that generous friends are not lacking, though for the want of deeper thought on the matter, few realize the importance

of Christian educational work, the immense sacrifice it entails, and the merit there is in coöperating and sharing with Christian educators in their work for God and country and the welfare of the young men of our generation.

The Jesuit Faculty of the University has given its life-services freely and gladly to the work. Those who would share with them in this great enterprise can do so most effectively by rendering material aid and contributing funds for the continuance and development of the work.

Nobili Hall, providing modern kitchens and dining halls, and additional living quarters for lay faculty and students, was long an urgent need. To construct this building, it was necessary to borrow a large sum from the banks. The present indebtedness of the University is slightly over $300,000.

FORM OF BEQUEST

I give and bequeath unto the President and the Board of Trustees of Santa Clara College, a corporation duly incorporated under the laws of the State of California, a sum of.....dollars.

SCHOLARSHIPS

Every year deserving young men of high character and aspirations, whose means do not permit their attending the University, appeal to the Faculty for assistance to obtain the education for which their talents and vocations fit them. There is scarcely a university in the United States which is not provided with a fund for this purpose, and a relatively large per cent of successful college men spring from the class of assisted students. To contribute to such a purpose is clearly a noble benefaction. But this is especially so with regard to those who apply for help to the University of Santa Clara. They are as a rule young men of high standing, who understand the paramount value of an education in a university which aims at the highest intellectual development of the student, while devoting no less attention to the perfect development of his moral character. As a consequence, to assist them in attaining their desire is to aid picked young men whose future is more than ordinarily full of promise, and who are destined to exert a most powerful influence on those among whom their lives will be spent.

Through the generosity of friends of the University a few such scholarships have recently been established, but there is need for many additional scholarships, either through permanent endowment or by annual gifts.

STUDENT ORGANIZATIONS

College life must include the development of the social side of every student's character. Marked initiative and leadership in organized religious and social movements for the common welfare of his fellows, are qualities expected of college men generally. For this purpose the University student organizations and activities furnish splendid opportunity.

RELIGIOUS ACTIVITIES

As the first thought of the University is the encouragement of a sound religious life on the part of the student body, special attention is given to those sodalities and religious organizations sponsored by the Church, some of which have existed at Santa Clara for more than three quarters of a century.

Sodality of the Immaculate Conception. Its object is to promote in its members a special and filial devotion to the Immaculate Mother of God, to imitate her virtues, to encourage, both by word and example, an eminent purity of morals and a manly fidelity to the practice of religion.

The League of the Sacred Heart. The object of this Association is to foster in the students an earnest religious spirit, particularly a deep and tender love towards our Lord in the Sacrament of His Love, and a consequent reparation for the offenses committed against Him. To this end the First Friday Communion is zealously encouraged.

The Saint John Berchmans' Sanctuary Society. This society has as members those students who as a reward for good conduct and exact application to their studies have been allowed to serve at Mass and assist at the other services in the College chapel.

Holy Name Society. The purpose of this society is the public manifestation of belief in the Divinity of our Lord Jesus Christ.

DRAMATICS

An exceptionally high standard of dramatics has been set at Santa Clara from the beginning. Earliest records show that classical productions were quite the accepted thing even in the fifties, nor have traditions changed. In consequence of this students acquire a rare facility of expression and unusual ease in public appearances.

Each year a major dramatic production is staged, giving opportunity to a large proportion of the student body to participate. In the past these productions have included such notable performances as "The Mission Play of Santa Clara" and "The Light Eternal" by Martin V. Merle '06, and "The Passion Play of Santa Clara" and "The Weaver of Tarsus" by Clay M. Greene, '69.

DEBATING

The standard of debating is on a par with that of dramatics. In addition to the various debating societies intercollegiate debates are arranged each year with representative colleges and universities.

The Literary Congress held its first meeting on February 22, 1857, and has since then furnished its members an opportunity for exercise in debating and other forms of public speaking. It consists of two Houses, the Philalethic Senate and the House of Philhistorians.

The Stephen M. White Debating Society, established October 14, 1922, has for its object the fostering of debating and public speaking among Freshmen in the College of Liberal Arts.

MUSIC

The University Band and Orchestra furnish their members with the opportunity for ensemble playing at the public exercises of the University.

The University Choir and Glee Club furnish vocal music for Chapel services and the public exercises of the University.

ATHLETICS

Athletics at Santa Clara are under faculty control through the Board of Athletic Control and the Faculty Moderator, by whom arrangements for intercollegiate and intramural contests are made.

In direct charge of Athletics and Physical Training is the Director of Physical Education, who is assisted by professional coaches in the various major activities.

Block S. C. Society. Members of the university teams who have secured the university letter are organized into the Block S. C. Society in recognition of their athletic ability and for the encouragement of a high standard of athletic conduct.

The Athletic Managers Association is composed of volunteers from each class who cooperate with the management in the conduct of games and the care of equipment.

ALUMNI ASSOCIATION

The object of this association is to strengthen and perpetuate college friendships, to preserve in former students a warm regard for Alma Mater and a lively memory of the substantial benefits she has bestowed, to cherish and advance her interests, to maintain her honor and sustain her reputation by manly and honorable conduct. Officers of the Association for 1932 are:

Thomas J. Riordan, A. M. '12, LL. B. '16, President
Harold J. Toso, Ph. B. '25, LL. B. '26, Vice-President
Victor A. Chargin, A. B. '14, LL. B. '18, Vice-President
George H. Casey, A. B. '07, Vice-President
Ernest D. Bedolla, Ph. B. '25, LL. B. '26, Secretary
James J. Nealon, ex '92, Treasurer

PUBLICATIONS

The "Santa Clara." The "Santa Clara" is the official weekly newspaper of the University. The aim of the "Santa Clara" is: To publish the news of the University, to aid in constructive work, and to afford the students of Journalism an opportunity for actual practice in newspaper editing, managing and make-up.

The "Redwood." The "Redwood" is the University annual published by the students to serve as a medium for literary work of more than passing merit, as a record of University activities, and as an expression of the student life of the University.

The "Owl." The "Owl" is the monthly literary supplement of the "Santa Clara." This publication offers a medium for literary work among the students. The name was taken from the first literary magazine of the University.

STUDENT CONGRESS OF THE UNIVERSITY

The Student Congress of the University is the student body organized for the encouragement of student activities, particularly athletics, and such other work as may be recommended by the Faculty.

The Faculty Club. This is an organization of the religious and lay members of the Faculty, organized as a means to become better acquainted with the problems confronting the various departments and to mould the Faculty into a solid working unit. Educational, scientific and ethical problems are discussed by the members. Men of prominence in public affairs as well as educators from other universities are invited from time to time to address the Faculty Club on subjects of particular interest.

Each department of the University has its own organization for the study of technical problems and for the encouragement of social life among the students of the department.

The Engineering Society. This is an organization made up of students in the College of Engineering with the object of familiarizing them with the conduct of meetings of public bodies and the acquisition of ease in public speaking. Lectures to the engineering students are given before this body.

The Business Administration Association. This is an organization of students in the College of Business Administration for the study of business problems and for the encouragement of social activities among the students of the College. Frequent lectures are given before the Association by business men of prominence.

Mendel Club. This is an association of students preparing for the study of medicine, organized for the study of scientific subjects and the encouragement of such activities as are of particular interest to the students of this department.

Legal Fraternity. This is an organization of students in the College of Law for the discussion of legal subjects, for the encouragement of social activities among the students of Law, and for the upbuilding of the Law work of the University.

The Arts Society. This organization is made up of students of the College of Arts and Sciences whose object is to create and foster literary talent among the students and to preserve the classical traditions for which the University has been noted for more than seventy-five years.

The International Relations Club. This is an association of the students interested chiefly in Political Science. The purpose of this organization is the study of international problems of both the past and the future. It is affiliated to the Carnegie International Clubs.

EXPENSES

Resident Students

Board, Lodging and Tuition, per semester	$350.00
Deposit for Laundry, per semester	20.00
Room Deposit	10.00
Professional Medical Fee, per semester	5.00

Non-Resident Students

Tuition, per semester	125.00

For All Students

Matriculation Fee, paid at entrance	10.00
Athletic Fee, per semester	2.50
"Santa Clara," per semester	1.00
Student Activity Fee, per semester	1.50
Gymnasium Fee, per semester	5.00
Library Fee, per semester	5.00
Deposit for Books, per semester:	
Law Students	35.00
Engineering Students	30.00
Other Students	20.00

Special Charges

For registration on the first day after the opening of semester	2.50
For each day thereafter	1.00
For each examination taken out of time or to remove a condition	2.00
For course in Subject "A," each time	5.00
For each syllabus (synopsis of semester's work in any subject furnished by professor)	2.00
For each copy of the student's record other than the first	2.00
Laboratory Fees, per semester:	
Physics, each course	12.50
Engineering Geology, lecture and laboratory fees	15.00
Geology, lecture course only	2.50
Engineering, Freshman and Sophomore, shop or field	10.00
Engineering, Junior and Senior	25.00
Biology 16, 21, 22, 101, 102, each	15.00
Biology 23, 24, each	12.50
Biology 105, 106, each	5.00
Chemistry 5, 6, 11, 12, each	12.50
Chemistry 9, 10, 107, 108, 111, 112, each	15.00
Additional fee in all laboratories to cover breakage, etc.	5.00
Graduation Diplomas and Certificates	10.00

The rental for private rooms covers charges for light, heat and care. No additional electrical appliances may be installed by students without permission of the Vice-President and the payment of extra charges.

Pocket Money and Incidentals

The amount of pocket money and money for incidentals is left entirely to parents and guardians. The University prefers that parents deal directly wih the students. Should, however, parents or guardians wish the Treasurer of the University to look after these matters, they must deposit a sufficient amount with him and instruct

him how the money is to be used. The University does not advance money for these purposes.

Infirmary Charges

Charges for the ordinary attendance of the University Physician, Nurse and attendants are provided for by the Professional Medical Fee. Medicines are charged at cost prices. For a room in the Infirmary, a dollar a day is charged.

Payments

All charges must be paid half-yearly in advance. Remittances should be made in the name of the University of Santa Clara. Deferred payments of bills or reductions can be sanctioned only by the President. For such a concession a fee of $1.00 per month will be charged for each $200.00 or fraction thereof remaining unpaid. If payment is deferred without a satisfactory understanding with the President, the latter is directed by the Trustees to remove the student in question from the institution. Semester bills and unpaid balances are subject to sight draft ten days after the bill is rendered.

It is distinctly understood that no student is entitled to take any semester examination or receive any diploma or degree or be furnished with a record of his credits while any bills due the University remain unpaid.

When a student is withdrawn temporarily or permanently from the University the Vice-President must be directly informed, and money supplied for traveling expenses.

Refunds

There will be no refund made on Fees or Special Charges.

Refund on Tuition and Lodging will be prorated quarterly according to the following plan: Any student withdrawing prior to October 15th or March 10th will have refunds made for the second half of the semester. No refund will be made for students withdrawing after the above dates. Refund on Board will be prorated weekly from the beginning of the week following the date of withdrawal. No refund will be made for withdrawal after the first day of the last month of each semester.

Articles to be Brought

The articles which every student coming to reside at the University should bring with him are, more or less: blankets, bed-covers, sufficient wearing apparel and toilet articles. Clothing to be sent to the laundry should be marked distinctly with the student's name before registration.

Opportunities for Self Help

Owing to the scholastic requirements of the University and the limited opportunities for profitable employment, students entering the University should be provided with sufficient funds to meet the major portion of their expenses. For worthy students of high scholastic standing there are available, to those who have been in residence one year or more, a limited number of University positions whereby they can earn a part of their expenses. All students, whether employed or not, must meet the same standard.

SCHOLARSHIPS

Besides the conditions laid down by the donors all scholarships administered by the University are subject to the following conditions:

First: Recipients of scholarships will be chosen from among those students who have been registered at the University for at least one year.

Second: In choosing students who are to benefit by the various scholarships preference will be given to needy and deserving students.

Third: Students who are recipients of scholarships must maintain at least a C average.

Fourth: In selecting students for scholarships participation in extra-curricular activities will be taken into account in all cases. Such activities will be debating, dramatics, athletics, music and contributions to the University Weekly and Annual. Continuance in extra-curricular activities will be required of all holders of scholarships.

Fifth: Any student benefitting by a scholarship who has a semester average below passing in any subject will automatically forfeit said scholarship.

Sixth: Once a scholarship has been awarded, the student continues to benefit by it as long as he satisfies the prescribed conditions.

Seventh: Scholarships may be cancelled at any time by the Administration for any infraction of the rules and regulations of the University.

The Alice Phelan Sullivan Memorial Scholarship

This perpetual scholarship for a resident student was founded in 1912 by the gift of $12,500 from "A Friend" in memory of Mrs. Alice Phelan Sullivan of San Francisco.

The Jesse W. Bryan Memorial Scholarship

This perpetual scholarship for a resident student was founded in 1913 by the gift of $12,500 by Mrs. Sarah A. Bryan in memory of her son, Mr. Jesse W. Bryan, a former student of Santa Clara.

The James Dunne Scholarships

These perpetual scholarships were founded in 1931 by the gift of $200,000 from Mrs. Viola K. Dunne in memory of her husband James Dunne, '74. They are fifteen in number and are to be applied to resident students from the State of California. Of the above amount only a part is at present available allowing $300 yearly for each scholarship.

The James D. Phelan Scholarships

These perpetual scholarships were founded in 1931 by the gift of $50,000 from the Hon. James D. Phelan, Ph. D. 1903. They are twenty in number, ten of which are valued at $150 each yearly and ten at $100 each yearly.

LOAN FUNDS

The following loan funds are open to students of the University under such conditions as may be provided by the President:

Filipello-de Saisset Loan Fund. A loan fund of $1,500.00 established in 1925 by Mrs. E. A. Filipello and Miss Isabel de Saisset.

Alumni Loan Fund. A loan fund of $500.00, established in 1925 by the Alumni of the University.

PRIZES

The following extraordinary prizes are open to competition on the dates announced in the University Calendar. The Faculty Committee on Scholastic Standing reserves the right not to award any of these prizes in the absence of sufficient competition or a meritorious grade of scholarship. No one is eligible to compete a second time for a prize which he has already won, except after an interval of one year. Students who have not been in attendance for both semesters may not compete.

Nobili Medal. An annual prize of $60 founded by Joseph A. Donohoe, Esq., in honor of the first president of Santa Clara, Rev. John Nobili, S. J., to be given to the student who shall be deemed first in morals, obedience and application to study.

The Archbishop's Medal. An annual prize of $50, the gift of His Grace, Most Reverend Edward J. Hanna, D. D., Archbishop of San Francisco, in memory of his illustrious predecessor, Most Rev. Patrick William Riordan, D. D., for the student who shall have submitted the best paper on a given religious topic.

The Ryland Prizes. The Hon. Caius T. Ryland founded in 1897 an annual purse of $45.00, leaving its disposition to the discretion of the Faculty. This the Faculty, after due consideration, assigned to the University Literary Congress, organized February 22, 1857, establishing the Ryland Debate to be held yearly between the two branches, the Senate and the House, and divided the purse into three prizes of $20.00, $15.00 and $10.00, respectively. By an agreement between these societies, each in turn selects the subject to be debated, and the other is granted the choice of the side it will defend.

The McCann Prize. Annual prize of $15.00 founded in honor of Daniel B. McCann, B. S. '84, to be given for the best short story.

The Redwood Prize. Annual prize of $25.00 founded in 1908 by the executive committee of "The Redwood," and given for the best essay on an historical subject.

The Owl Prize. An annual prize of $25.00 founded by the directors of the former College Magazine, "The Owl," to be given to the winner of an oratorical contest in the University.

The Orella Medal. An annual prize of $25.00, the gift of Dr. Firmin R. Orella, B. S. '89, to be given to the writer of the best paper on a scientific subject.

The Barchi Prizes. Annual purses of $15.00 and $10.00 given by Joseph M. Durney, Esq., for the best paper in such scientific subject as shall be determined by the Faculty.

The William H. Leahy Prize. A gold watch, valued at $50.00, the gift of Mr. William H. Leahy, to be given to the winner of the Dramatic Art Contest.

Herman Budde Prize. A prize of $25.00 for the best essay on a selected subject.

The American Law Book Company Prize. A set of law books awarded to the student in the course of Legal Research having the highest average.

The Bancroft-Whitney Company Prize. A set of law books awarded to the member of the senior class in Law having the highest average.

Two Silver Medals to be given to the following students who become most distinguished for good conduct and application to study:

1. The most distinguished **Resident** student.
2. The most distinguished **Non-Resident** student.

ADMISSION

General Statement

Application for admission, accompanied by scholastic credentials and testimonials of character, should be filed with the Registrar on or before August 1st. It is obligatory to submit on entrance official records from the school last previously attended, together with a transcript of record of all previous high school and college credentials. These credentials are to be forwarded directly by the proper officer of the school last attended and not through the student.

Testimonials

All applicants for admission must present satisfactory evidence of good moral character and a certificate of honorable dismissal from the school last attended. In case of an intermission of study immediately preceeding registration the testimonial of good character should come from some responsible person who has been in a position to know the habits of the applicant during that time. Moreover, all applicants must at the time of registration submit the names of three persons to whom the Faculty may refer for further information regarding their character. The certificate of honorable dismissal from the school last attended should be accompanied by a letter from the principal certifying to the fitness of the candidate for successful college work.

No application for admission will be given consideration until the testimonials herein provided for have been offered.

Scholarship Credentials

Candidates for admission to any of the undergraduate courses of the University must qualify:

(a) For admission to Freshman standing:
   1. By evidence of the completion of the regular four-year high school course of the Preparatory Department of this University or of a similar course in an approved high school, or
   2. By passing an examination in subjects equivalent to fifteen standard high school units. The subjects to be presented must be arranged in advance with the University.

(b) For admission to the undergraduate course of his choice. The following are the prescribed entrance units for the respective degrees offered by the University in its various courses:

	A.B.	Ph.B. & B.S.	Engrg.
English	3	3	3
Latin*	4		
Greek*	2		
Foreign Language*		2	2
Algebra	1	1	1½
Geometry	1	1	1½
History	2	2	1
Laboratory Science	1	1	1

*Students entering with only two units of Latin for the A. B. course or without two units of foreign language for the other courses, will be given an opportunity to make up these deficient units during the first two years of college. Both units must be in the same language.

It is strongly recommended that the unprescribed units for the Ph. B. or B. S. degrees be in Mathematics, Languages (preferably Latin) or Sciences.

No credit is ordinarily allowed for physical education or music. One unit each may be accepted for commercial subjects, vocational subjects, and mechanical drawing.

Half units will be accepted only when presented in addition to integral units in the same subject or in half year subjects which constitute a complete course in themselves, e. g., Solid Geometry. Any two of the biological sciences (Physiology, Botany, Zoology) may be combined into a continuous year's course equal to one unit.

The University reserves the right to require entrance examinations in the case of applicants whose certificates show grades below 80% in the prescribed units. Admission on school certificates is in all cases provisional and if, after admission, a student fails in any subject for which a school certificate was accepted, credit for that entrance subject may be cancelled.

A matriculation deficiency in a subject continued in the University in which the deficient student attains a grade of C (77-84), may be removed by the proper faculty, on the recommendation of the professor, with the approval of the Dean of the Faculties. Students, however, are cautioned not to assume in advance that this will be done.

Examination in Subject A

All lower division entrants in the colleges at Santa Clara must, at the time of their first registration in the University, take an examination, known as the Examination in Subject A, designed to test their ability to write English without gross errors in spelling, grammar, diction, sentence structure and punctuation.

The examination in Subject A will be given within two weeks after the opening of each semester. The papers submitted in the examination will be rated as either "passed" or "not passed." Any student who is not present at the examination in Subject A which he is required to take will be rated the same as those who have not passed the examination.

All students who do not pass in the examination in Subject A will be required to take, immediately after their failure, a course of instruction known as the Course in Subject A, without unit credit toward graduation. This course will be given each half year two hours

a week for the semester, beginning one week after the examination. Every student who is required to take the course in Subject A will be charged a fee of $5 and the charge will be repeated each time he takes the course.

Admission to Advanced Standing

Admission to advanced standing is by specific action of the Committee on Credentials and Registration, which will evaluate all credits presented and determine the rating of the candidate.

Students from other institutions of recognized collegiate rank, including Junior Colleges with well established courses, may be admitted to such standing and upon such terms as the Committee shall deem equitable. Every such candidate is required, besides the prescribed testimonials of character and scholarship, to present a catalogue of the institution in which he has studied, and a full statement, duly certified, of the subjects he has therein completed and of the subjects there presented for entrance. The University reserves the right to determine after a test of at least one semester the amount of credit that the applicant may receive, and meanwhile he shall have the status of an unclassified student.

Admission of Special Students

Candidates for admission as special students must be persons of mature age who desire to take up special work in one department or in one subject with its related branches. Such special students are not candidates for a degree, but they may become candidates by satisfying the requirements for a regular course. No one will be admitted directly from a secondary school to the status of a special student. Entrance examinations in the subjects of fundamental importance for the work proposed will be assigned in practically all cases. Registration as a special student is for one semester only and no one may register for less than ten hours. Re-registration will be refused if the student has not shown earnestness and definiteness of purpose or if his work has been unsatifactory in whole or in part.

Admission of Foreign Students

Candidates for admission who come from foreign countries must present original and complete educational credentials, together with a catalogue giving full description of the courses. Provisional registration may be then given pending verification of the record and until the student concerned has successfully completed one semester's work of not less than twelve hours, when permanent matriculation may be given. Students from other than English-speaking countries must, in addition, possess sufficient knowledge of English to carry satisfactorily their class work.

RELIGIOUS TRAINING

To cultivate the heart, no less than to develop the intellectual and physical faculties of the student, is a duty kept constantly and sacredly in view.

As the Faculty of the University profess the Catholic religion, the exercises of religious worship are Catholic; but members of any religious denomination are received, provided they be willing, for the sake of order and uniformity, to conform respectfully to the religious observances of the University.

The university authorities are convinced that without religion there can be no education in the truest sense of the word, that is to say, no complete and harmonious development of the intellect and heart of man. They hold, furthermore, that religious truth, being definite and certain, may be taught with as much exactness as language or any other branch. Accordingly the study of Christian Doctrine is required of every Catholic student, and two periods weekly are devoted to it in every class of every course. One unit per semester is allowed for this work.

STUDENTS' HEALTH SERVICE

The University exercises supervision over the health of students. Though a certain degree of sickness is inevitable among so many, its percentage is very slight. A physician is in daily attendance at the University without extra charge for minor cases. A certificate of health, either from the home or from the resident physician, is required of each student. Wholesome food, regular hours for rising and retiring, excellent climate and ample opportunity for outdoor recreation, all combine to improve the general health of the students who are registered at Santa Clara.

All students at the time of registration are required to undergo a physical examination under the supervision of the university physicians. Moreover, in accordance with the recommendation of the State Board of Health all students must present a certificate of vaccination or be vaccinated by one of the university physicians.

The University assumes no responsibility for injuries sustained by any student during play, in the swimming tank, in the gymnasium, or during athletic contests.

DISCIPLINE

Students whose homes are not in the neighborhood must reside within the University unless they are accompanied by their parents.

Students are not permitted to have books or other publications that have not been approved by the Vice-President.

The students' correspondence is subject to the inspection and control of the President.

To hold meetings or to form clubs or societies of any kind without the consent of the President, to gamble, to enter pool rooms, the habitual use of profane language, unbecoming conduct either within or without the precincts of the institution, the possession or distribution of indecent publications or pictures, intoxication, procuring or introducing intoxicating liquors, directly or indirectly, into the University, habitual idleness and violation of the rules of the University, obstinate refusal to submit to a punishment inflicted, absence from the University at night without leave, avowed principles of infidelity, express contempt or ridicule of religion, are offenses which expose the offenders to dismissal or suspension, as in the judgment of the Faculty shall be deemed necessary.

It is strictly forbidden for any student or group of students to haze any other student or subject him to any personal or physical indignity or treat him in such wise as may reasonably give offense.

No student will be permitted to leave the University on visits of any length, except during Christmas and Easter vacations, if such be the wishes of his parents or guardians. Parents are requested not to

call their sons home at other times, except in cases of urgent necessity, as such interruptions, besides tending to prevent the acquisition of habits of concentration and persevering work, are apt to result in poor scholarship and interfere seriously with the students' entire scholastic training.

Students who, having left the University for the summer vacation, Christmas holidays, or other recesses allowed by the President, fail to be present on the day for the reopening of class, may, by the fact of absence, be excluded from the University, or at the discretion of the Faculty from privileges until the following semester, unless parents or guardians show cause of absence which the Faculty shall consider wholly sufficient.

Promptness in reaching the University on the day fixed for the opening of classes is necessary. It is essential that parents and students understand this clearly from the beginning of their connection with the University, as promptness in returning from vacation and recesses, which is requisite in order to prevent the loss of valuable time and the forming of habits of procrastination and negligence of duty, is strictly insisted on. Anyone returning after the date set down for the opening of the fall or spring semester will be required to pay a late registration fee of $2.50 for the first day and $1.00 for each day thereafter. Registration is not completed until a student has attended classes.

The University reserves the right to dismiss at any time a student who fails to give satisfactory evidence of earnestness of purpose and of interest, primarily in the serious work of college life. Dismissal may be made without specific charges and, in rare cases, perhaps on grounds that seem insufficient to students and parents. The University in these cases holds itself to be the more capable judge of what affects the interests of the institution and the student body.

Eligibility Rules

Except where otherwise specifically provided for by the Faculty, students taking part in public debates, oratorical or dramatic art contests or representing any department of the University in intercollegiate athletic events, as well as all those who are appointed on the staff of the university publications or as officers of student organizations, or are elected as captains or officers of any society, are subject, at the time of their selection or appointment, to the following eligibility rules: (1) They must have no conditions or failures; (2) They must have attained a satisfactory grade in conduct and application during the preceding month and a weighted average of C (77-84) in the last mid-term or semester examinations; (3) They must not be under censure.

Any student admitted to the University on a scholarship or as a student worker who fails to obtain a semester average of C (77-84) in any of his subjects forfeits his right to his position or scholarship.

The registration of a student is deemed a recognition on his part and on the part of his parents or guardians of compliance with all the rules and regulations of the University, and acceptance of all conditions laid down in the catalogue.

Registration Card

Before registering for instruction in any department, the student must obtain a card signed by the Treasurer of the University, show-

ing that a satisfactory settlement of his account has been made. This card is handed to the Director of Studies, from whom the student must obtain another blank, write thereon the subjects elected and approved, and present it to his professors for their signature. This registration card is then returned to the Director of Studies, to be filed in his office.

SCHOLARSHIP

No student is eligible to enter any examination, written or oral, nor is he entitled to credit, unless he has been in attendance at 80 per cent of his classes, but students in the College of Law must have been present at 90 per cent of the classes. Absence caused by sickness will not excuse a student from the operation of this rule.

Written Work

The following written work is required of the students, in all the classes indicated:

All upper division students in the College of Arts and Sciences must write and deliver to their professor every month an essay of not less than 2500 words, on a subject selected by him from the matter lately studied.

In all classes of Mathematics, three groups of problems are to be set weekly.

In all classes of English, a composition, essay or poem, and two written exercises in addition, are to be given in weekly by the students.

In all classes of Modern Languages, there shall be as many written exercises as there are classes.

In classes of Latin and Greek three themes are to be handed in each week.

All of these out-of-class exercises will be corrected by the teacher, either in class or out of it, and returned to the students.

Written Examinations

Written examinations are held every six weeks in all subjects and in all departments. They are also held twice a year upon the work done during the preceding semester.

Oral Examinations

At the end of the scholastic year:

1. All students, regular or special, who have followed the courses in Philosophy, or any part thereof, in the upper division will be examined therein.

2. At the discretion of the Faculty, students of the College of Arts and Sciences may be required to pass an oral examination in their major subject.

3. Upper Division students in the College of Business Administration will be examined in their major subjects.

4. Students who have followed the course in Elementary Law will be examined therein.

5. Students in the College of Law will be examined in all Law subjects taken during the year.

No student will be orally examined unless he has passed satisfactorily all the written examinations given at the end of each semester on the matter therein, or having been conditioned in the first semester examination, has removed the condition. The examination must extend to all work done during both semesters in the subjects indicated. The examination is to be conducted privately before a board of the Faculty who may increase the time allotted to any examination if they see fit. It does not determine the grade of a student's standing, but neither promotion nor credit is given without a successful examination.

General Requirements

In order to be accepted in fulfillment of any requirement for a degree, all work must be completed with grade D (70-76) or over, and the general average of the work must be of grade C (77-84) or above.

The grade of work completed during the semester is computed as follows (all work being marked on the basis of 100% for perfect work):

For each mid-term grade, class-work counts two-thirds and the mid-term examination one-third;

For each semester grade, the average of the three mid-term grades counts two-thirds and the semester examination one-third.

Where an oral examination is required, the student will not be graduated unless he attains therein a passing grade of D (70-76).

Special regulations as to the grades to be maintained by law students and candidates for degrees and certificates will be found under "College of Law, Graduation."

Amount of Work

In order to receive a degree, a student is required to complete the requisite number of semester hours and secure an equal number of credit points, i. e., an average rating of C grade or better in all subjects.

A semester hour is the standard for computing the amount of a student's work. A semester hour is defined as one lecture or recitation one hour in length per week for one semester. Three hours of laboratory work are equivalent to one recitation hour. Two hours of preparation on the part of the student are required for each hour of lecture or recitation.

Regular work for Freshmen is **sixteen hours** per week. For all others it may be from **fifteen** to **eighteen** hours. Candidates for a degree will not be allowed to register for fewer than twelve hours of work.

No Freshman may register for more than **sixteen** credit hours (except in the College of Engineering) without special permission from the Dean of the Faculties, and such registration is not allowed to any student in his first semester of residence.

In the case of students of longer attendance, the Dean may grant permission to take studies up to **eighteen** credit hours a week, after

the standing of the student in each study of the previous semester is examined and found to be B (85) or over. On the other hand, students carrying more than the normal amount of work who fail to maintain a standard of C (77-84) in all of their courses, may be restricted by the Dean to the normal number of units. Even if, because of the difficulty of making the desirable courses total the exact limit, a student is permitted to carry a study-list slightly greater than the limits here set, or if a student transfers from another college where a greater study-list is permitted or required, the credit towards the degree will be limited strictly according to this rule.

Quality of Work

A student's grade of scholarship is given according to the following schedule:

Above passing:	Below passing:
A (93-100), Excellent	E (60-69), Conditioned
B (85-92), Good	F (0-59), Failed
C (77-84), Fair	I, Incomplete
D (70-76), Passed	W, Withdrawn

Conditions

A grade of E (60-69) at the end of a semester indicates a condition. A student who is conditioned in two subjects may be excluded from the University, but without prejudice to his continuing his studies at another university.

Where a student is conditioned at the end of the semester, he will be permitted to remove the condition at the time set for the examinations for the removal of conditions.

Where a student is conditioned in a written or oral examination, given at the end of the school year, he will not be re-examined until the beginning of the next school year; provided however, that where a student is conditioned in a written or oral examination given as one of the final tests before graduation, he will not be re-examined until six months after receiving the conditions.

Where a student has been re-examined in any subject to remove a condition or reach a certain average, another examination may be permitted in the discretion of the Faculty; but in no case may it be taken until two months have elapsed since the former examination. If the student fails to reach the required average no further examination will be allowed.

Any student who enters his Senior year with a condition will have the status of a special student unless this condition is removed within one month after the opening of the first semester.

Failures

A grade of F (0-59) at the close of a semester indicates a failure. A failure in a subject means that the student must repeat the work in class the next time it is given. A student who fails in two subjects may be excluded from the University.

A conditioned student who fails to pass a satisfactory examination at the time set for condition examinations receives a failure in the subject, unless, on recommendation of his professor, the Faculty shall permit him to review a subject in which he is thus deficient

with the assistance of an acceptable private tutor; in which case he will be excused from attending the recitations, but will be required to take the regular examination at the end of the year or half-year.

If the condition is received in a laboratory course, the student must make up the work in which he is deficient before the time of the condition examinations or receive a failure.

Credit Points

A candidate for a degree must gain not only the number of credit hours required, but his work must reach a certain standard of excellence. In addition to the required number of credit hours necessary for graduation, each student must earn an equal number of credit points, or an average mark in all subjects of C or better.

For a grade of A in a given course a student will receive three times as many credit points as there are credit hours in that course; for a grade of B, twice as many credit points; for a grade of C, as many credit points as credit hours; while D gives credit hours but no points. For every failure at the end of the semester, one credit point per credit hour is to be deducted from the total number of credit points that could otherwise be gained. Such lost points cannot be made up by repeating the course, even though the credit hour in such cases will count towards the total number of credit hours required for graduation.

For example: A four hour course in which the student receives the grade of A gives 12 credit points; if the grade is B, 8 credit points; if C, 4 credit points; if D, no credit points. If the grade is F, four credit points are deducted.

Thus, in acourse where 128 credit hours are required for graduation, the maximum number of credit points that can be secured by a student is 384; the minimum, 128.

Candidates for graduation must attend any course of lectures or any other exercises that have been or may be authorized and equipped by the Faculty, even though such courses receive no value in credits.

No student will be advanced to full junior standing who has less than 64 credit hours and 64 credit points by the end of his sophomore year.

Electing Studies

All students must inform the Director of Studies in writing as to their choice of subjects, and no one may enter upon a course or relinquish one already taken up without his advice and consent, upon penalty of receiving no credit in the first case, and a condition in the subject abandoned, in the second.

Candidacy for Degree or Certificate

Every student who wishes to become a candidate for a degree or certificate in any department of the University must, not later than one month after his entrance, file with the Dean of the Faculties a written statement of the degree or certificate to which he aspires and the work which he proposes to do. He will then be informed whether he may be admitted as a candidate for such degree or certificate and whether the work proposed is satisfactory. Any change of purpose must be similarly announced and approved.

Thesis

Candidates for a degree must submit a thesis on their major or some cognate subject. The thesis shall consist of not fewer than 5000 words and shall be typewritten on National White unruled paper 8½x11 inches. The subject must be submitted to the Dean of the Faculties for approval not later than October 15 and the thesis itself handed in completed on February 1st of that same year. The presentation of an acceptable thesis is an absolute prerequisite for admission to final examination. The ultimate decision as to whether the effort merits the certificate or degree rests with the Committee on Theses.

COURSES, UNITS

Courses in the University are divided into three groups: The Lower Division, comprising the studies in the freshman and sophomore years; the Upper Division, comprising the studies in the junior and senior years, and leading to the Bachelor's degree; and Graduate Courses, comprising graduate studies, and leading to advanced degrees.

Courses in the Lower Division are numbered from 1 to 100. Courses in the Upper Division are numbered from 101 to 200. Courses for Graduate students are numbered from 201 up. Under certain conditions Lower Division courses may be taken for Upper Division credit, but in such cases it is expected that a higher standard of work shall be done and the instructor will assign additional work for such students. Upper Division subjects may be taken for Graduate credit under such conditions as may be prescribed by the Dean of the Faculties and the professor in charge.

RECOMMENDATIONS TO OTHER SCHOOLS

No student will be recommended for entrance into any other university or college who has not maintained an average of B (85-92) in every subject throughout his course.

Students wishing Transcripts of Record in order to transfer to another school or for any other purpose should make early and seasonable application for the same. No such statements will be made out during the busy periods of examination and registration. Credentials which are accepted for admission become the property of the University and are kept permanently on file.

SESSIONS

The first semester begins about the middle of August and ends about December 20th.

The second semester begins about January 3rd and ends about May 15th.

As in most departments of the University new courses are not begun in January, students desiring to matriculate at the beginning of the second semester can only be received on condition that they are prepared up to the point then reached by the class which they desire to enter.

GRADUATE DEPARTMENT

The graduate department offers students who have attained academic degrees studies leading to the Master's or Doctor's degree. The determination of these courses rests with the Committee on Post-Graduate Studies. A sufficiently wide option is allowed, much of the instruction being in the form of direction along lines of original research. Courses may be had in the Classics, English and Public Speaking, History, Mathematics, Modern Language, Philosophy, Political and Social Sciences, Law and Engineering.

In the graduate division residence at any place or in any field which may be designated by the Dean of the Faculties as suitable for the work of a candidate for one of the advanced degrees is regarded as residence at the University.

ADMISSION TO GRADUATE STANDING

The minimum requirements for graduate standing are fulfilled by graduates of colleges and universities of recognized grading, whose credentials evidence ability and promise, and who expect to become candidates for advanced degrees or who purpose to pursue regular advanced professional or research courses. In all cases evidence of the Bachelor's diploma must be presented along with a certified copy of the applicant's complete scholastic record. Admission to the graduate department does not of itself imply admission to candidacy for a higher degree. The grade of work which graduate students may elect and their standing will depend upon the extent and character of their undergraduate courses.

DEGREES

For the degree of Master of Arts (A.M.), the candidate must have an A. B. degree and must devote one year exclusively to resident graduate study, completing at least twenty-four semester hours. He must, moreover, pass a satisfactory examination, both written and oral, in all the subjects studied and he must present a typewritten or printed thesis in his major subject at least four weeks before the date fixed for the annual conferring of degrees. The ultimate decision as to whether the thesis merits the degree rests with the Committee on Theses.

For the degree of Master of Science (M.S.), the same conditions must be fulfilled as for the degree of Master of Arts, provided the candidate has a B. S. degree and his major subject has been scientific.

For the degrees of Chemical Engineer (Ch. E.), Civil Engineer (C. E.), Electrical Engineer (E. E.), and Mechanical Engineer (M. E.), it is required that the candidate be a graduate in the College of Engineering of this University who has been engaged in acceptable professional work for a period of not less than three years after receiving the Bachelor's degree. Candidates for these degrees must declare their candidacy and file with the Dean of the College of Engineering a detailed statement covering their professional study and experience and an outline of their proposed thesis not later than December 31st preceding the commencement at which they wish to

receive the degree, and they must submit the completed thesis not later than one month prior to the date fixed for the annual conferring of degrees.

For the degree of Doctor of Philosophy (Ph. D.), the candidate in addition to completing all the work prescribed for the LL. B. degree complete, under conditions similar to those outlined for the A. M. degree, the courses set forth in the catalogue in Roman Law, International Law and the History of English Law.

For the degree of Juris Doctor (J. D.), the candidate must must complete not less than three years of graduate work in pursuance of an accepted course of study. The course in question must include one principal and one or two secondary subjects. A reading knowledge of French or German (and of Latin for those electing Scholastic Philosophy as their major course), is a prerequisite. Moreover, the candidate must pass a satisfactory examination, both written and oral, on the work done and present a satisfactory thesis.

No degree in the graduate department will be conferred unless the candidate present himself in person at the commencement at which the degree is awarded.

COLLEGE OF ARTS AND SCIENCES

CURRICULUM

The curriculum of the College of Arts and Sciences extends over a period of four years and comprises courses of study selected with special regard to their cultural value. In addition the courses selected are designed to afford the most solid foundation for the learned professions and the larger commercial pursuits characteristic of the present age. The curriculum selected assumes that the essence of education is concerned with the physical, mental and moral development of the whole man and that specialization in particular fields should rest upon the foundations thus laid. For this reason the curriculum of the College of Arts and Sciences insists on the advantage of a prescribed training in the humanities, rhetoric, mathematics, natural sciences, religion and the various branches of philosophy. Concentrated work in the College of Arts and Sciences is offered under the name of "majors" in the fields of Classical Languages, Economics, English, History, Philosophy, Political Science, Biology and Chemistry.

DEGREES

The College of Arts and Sciences confers the degrees of Bachelor of Arts, Bachelor of Philosophy and Bachelor of Science.

The Bachelor of Arts degree is conferred on those students who, presenting at entrance four credits in Latin and two credits in Greek, complete two more years of these languages in college in addition to the other requirements of the major of their choice. Students entering without the prescribed amount of Latin and Greek but who have had at least two years of credit in Latin may be permitted to make up the deficiencies in Latin and Greek during their college course.

The Bachelor of Philosophy degree is conferred on those students who, substituting modern language for Latin and Greek, complete the requirements for the major in Philosophy.

The Bachelor of Science degree is conferred on those students who, substituting modern language for Latin and Greek, complete the requirements for any of the majors offered other than Philosophy.

THE PRE-MEDICAL COURSE

The pre-medical department as distinct from the College of Arts and Sciences has been discontinued. The requirements prescribed for pre-medical students by the Council on Education of the American Medical Association are met by following for at least three years the science courses in the College of Arts and Sciences.

DIVISIONS OF THE COLLEGE

The college recognizes a lower and an upper division. The work of the lower division comprises the studies of the freshman and sophomore years. The completion of the lower division is a prerequisite for admission to the upper division. For any degree a minimum of 128 units is required, 64 of which the student will normally take in the lower division and 64 in the upper. Each unit

represents one hour of the student's time at the University weekly, during one-half year, in lecture or recitation, together with the time necessary in preparation therefor, or a longer time in laboratory or other exercises not requiring preparation.

No student may register for more than sixteen hours (outside of Religion) without special permission of the Faculty, and such registration is not allowed to any student in his first semester of residence. After one semester of regular work, students beyond freshman may receive permission to take not more than eighteen units per semester, provided they have attained a weighted average of at least B (85-92) the preceding semester. On the other hand, students carrying more than the normal amount of work who fail to maintain a standard of C (77-84) in all their courses may be restricted by the Dean to the normal number of units. Even if, because of the difficulty of making the desirable courses total the exact limit, a student is permitted to carry a study-list slightly greater than the limits here set, or if a student transfers from another college where a greater study-list is permitted or required, the credit towards the degree will be limited according to this rule.

LOWER DIVISION

In the lower division it is expected that the student, in addition to fulfilling the prerequisites for the major work upon which he will concentrate in the upper division, will make an effort to establish a basis for that breadth of culture which will give him a realization of the methods and results of some of the more important types of intellectual endeavor, and a mental perspective that will aid him in reaching sound judgments. The lower division requirements were designed to provide in some measure for the accomplishment of this purpose, without unduly limiting the student's opportunity to satisfy his individual tastes and preferences.

Certain courses taken in the high school are accepted as fulfilling in part or in whole some of these lower division requirements. It is desirable that the student should so arrange his high school program as to reduce the required work in the fields of foreign languages, mathematics and the natural sciences. This makes his program more flexible, gives him greater freedom of choice, and prepares him to pass more quickly into advanced work or into new fields of study. In no case, however, does the satisfaction of lower division requirements in the high school reduce the amount of work required in the lower division or for the degree. The lower division work presupposes the prescribed entrance requirements, the successful completion of Subject "A" and the specified requirements in the respective courses, along with an essay of not less than 5,000 words in the subject prerequisite for the upper division major, as provided in the General Regulations. The presentation of an acceptable essay is an absolute prerequisite for admission to final examinations.

Pre-legal requirements are met by students following the regular courses in the College of Arts and Sciences provided they include Elementary Law among their electives in their Junior year.

UPPER DIVISION

Only those students who have completed the lower division re-

quirements will be registered as regular students in the upper division.

Degrees in the College of Arts and Sciences will be granted upon the following conditions:

1. The total number of units in college courses in the lower and upper divisions must be at least 128.

2. At least 60 units of upper division subjects must be completed after fulfilling the requirements of the lower division. Where lower division units are taken for upper division credit both the quantity and quality of such work must conform to upper division standards.

3. Candidates for graduation must complete a major of 24 upper division units in either Classical Languages, Philosophy, Economics, English, History, Political Science, Chemistry or Biology.

4. In addition to the units in the major chosen, a minor of 12 units in a specific department must be offered. For those choosing a major other than Philosophy a minor in Philosophy will be prescribed.

5. Candidates for a degree must submit a thesis in their major subject consisting of no fewer than 5000 words, as prescribed in the General Regulations. The presentation of an acceptable thesis is an absolute prerequisite for admission to final examinations. The ultimate decision as to whether the effort merits the degree rests with the Committee on Theses.

6. Candidates for graduation must moreover pass all prescribed oral examinations provided for in the General Regulations.

7. Residence of at least one year immediately preceding graduation is required for the granting of any degree.

Electives. Courses not taken as prescribed courses and not included in the students' major and minor sequences may be chosen as free electives to complete the 128 units required for graduation.

Additional Units. When the nature of the course permits, students taking a course as a Major or Minor, with the approval of the Dean of Faculties, may arrange to present work for additional credit in such course. Such work shall be done under the direction of the Professor in charge and in both quantity and quality shall conform to the required standard of the course.

Subject Requirements

(a) Prescribed subjects for the A. B. degree:

	Credit Hrs.		Credit Hrs.
English	12	History	6
Latin	12	Metaphysics	12
Greek	12	Ethics	6
Science	8	Logic	4
*Public Speaking	4	Religion	8

(b) Prescribed subjects for the B. S. and Ph. B. degrees:

English	12	Logic	4
Modern Language	12	*Public Speaking	4
Science	8	Metaphysics	12
Religion	8	Ethics	6

*Four units of Public Speaking are required for those students only who are following the Prelegal course; otherwise only two units are required.

Students who have received the Junior Certificate in other institutions must secure before graduation all the prescribed credits, except those in Science and History. In place of these they may offer such electives as are approved by the Dean of the Faculties.

The prescribed courses in Evidences of Religion will be required only of Catholic students.

COLLEGE OF BUSINESS ADMINISTRATION

GENERAL STATEMENT

The College of Business Administration aims to train students to meet the general as well as specific problems of modern industry.

A knowledge of accounting, banking, credit, labor conditions, marketing, insurance, statistics, business organization and administration and of business law is essential for anyone who aspires to take part in the organization and management of our modern specialized industrial system.

The courses in ethics, logic, psychology, history and science provide the student with the broader fundamental principles necessary for dealing with the industrial system in its social relationships.

Extreme specialization is not aimed at in the College of Business Administration, although each student is required to select a major in one of the three basic departments, i. e., courses relating specifically to Business Organization and Management, Finance or Accounting.

Regardless of the department selected for a major all students are required to include in their curriculum a sufficient number and diversification of courses to provide a comprehensive preparation for general business problems.

BUSINESS LECTURES

Throughout the year a series of lectures is given by business and public men of prominence on various problems of interest to the student body. These lectures bring the students into personal contact with representative business men and also enable them to become familiar with practical business problems.

INSPECTION TRIPS

The close connection of the University with the business and industrial establishments of the San Francisco metropolitan district enables the faculty to arrange various inspection trips to such industries as may be of interest. In this way students are given a practical insight into the business organization and working of representative industries.

GRADUATION

The curriculum of the College of Business Administration extends over four years and leads to the degree of Bachelor of Commercial Science.

The work in this college is divided into that of lower division and upperdivision.

Graduation from this college requires the completion of 124 units of college work, of which 64 units constitute the amount required in the lower division of the University, and at least 60 of which are required in upper division.

LOWER DIVISION

The requirements for the lower division in the College of Business Administration are as follows:

1. The successful passing of Subject A, prescribed in all departments of the University.

2. The equivalent of 12 units in one of the following languages: French, Spanish, Italian, or German.

3. The successful completion of the following courses which are specifically required in the lower division:

English	6	units
Religion	4	"
Logic	4	"
Philosophy	6	"
Modern Languages	12	"
College Algebra	3	"
Mathematics of Investment	4	"
Principles of Economics (Econ. 1A and 1B)	6	"
Natural Sciences	8	"
Accounting (Econ. 10A and 10B)	8	"
Public Speaking 1, 2	2	"
Economic History	6	"
Physical Education	1	"

SCHEDULE OF COURSES

Freshman Year

First Semester	Units	Second Semester	Units
English (Eng. 1)	3	English (Eng. 2)	3
Logic (Philos. 1)	2	Logic (Philos. 2)	2
Modern Language	3	Modern Language	3
College Algebra (Math. 1)	3	Mathematics of Investment (Math. 5.)	4
Economic History (Econ. 15)	3	Economic History (Econ. 16)	3
Religion (Religion 1)	1	Religion (Religion 2)	1
Public Speaking (P. S. 1)	1	Public Speaking (P. S. 2)	1
Physical Education	½	Physical Education	½

Sophomore Year

Philosophy (Philos. 3)	3	Philosophy (Philos. 4)	3
Accounting (Econ. 10A)	4	Accounting (Econ. 10B)	4
Prin. of Economics (Econ. 1A)	3	Prin. of Economics (Econ. 1B)	3
Modern Language	3	Modern Language	3
Natural Science	4	Natural Science	4
Religion (Religion 3)	1	Religion (Religion 4)	1

UPPER DIVISION

The requirements for graduation are as follows:

Philosophy (Phil. 101-104)	12 units
Religion (Relig. 101-106)	4 units
Commercial Law	10 units
Statistics	4 units
Technical subjects	24 units
Electives	6 units
Total	60 units

Candidates for a degree must submit a thesis on their major or allied subject for which one unit credit shall be given.

The technical subjects represent practical and theoretical courses on business subjects given in the College of Business Administration.

COLLEGE OF ENGINEERING

INTRODUCTION

The foundation of the College of Engineering in the University of Santa Clara was the result of repeated and urgent requests that opportunities should be given young men ambitious to follow the engineering profession, to pursue and complete the studies leading to it in an environment and atmosphere conducive as well to deep persevering study as to cultural and moral development.

To meet this demand, the Faculty of the University has added sound and thorough courses in Chemical, Civil, Electrical and Mechanical Engineering. As in all other departments of the University, the students are under the moral guidance of the Jesuit Fathers. The technical work of these departments is in the hands of experienced and practical engineers who devote their whole time and attention to the success of their work. As is traditional at Santa Clara, students in Engineering are given individual care, assistance, advice and encouragement. The work exacted is of the highest type; nevertheless, owing to this individual care and to the judicious admission of students as well as to the prompt elimination from the various departments of students found to be inadequately prepared in fundamental studies or in seriousness of purpose, there is very little likelihood and no excuse for failure on the part of the student.

The engineer today must be more than a machinist, electrician or surveyor. He can no longer be a self-made man in the old sense. His mind must possess the acumen and culture which only a broad college training and college association can give, and his acquaintance with and love of mathematics and science should be the foundation on which his knowledge of their technical application is based.

This is the ideal which Santa Clara cherishes for the engineers who shall receive their education from her, and the notable work which her graduates are doing proves that this ideal leads to success.

COURSES—DEGREES

Courses are offered leading to the degrees of Bachelor of Chemical Engineering, Bachelor of Civil Engineering, Bachelor of Electrical Engineering and Bachelor of Mechanical Engineering. These courses aim, first, to give the student a thorough knowledge of the sciences on which all Engineering is based; secondly, to develop judgment by practical work so that he may be able to use his knowledge and information to the best advantage.

Chemical Engineering is concerned with the design, construction and operation of plants to carry out chemical processes on a commercial scale. It is applied in such industries as sugar, rubber, dye and chemical manufacturing.

Civil Engineering covers the field of structural work (steel, concrete and stone buildings and bridges), municipal engineering (roads, pavements and sewers), water power development, irrigation and railroad construction. These are all based on the fundamental sciences of Mathematics, Physics and Chemistry, and as much practice as possible is given to facilitate the application of these sciences to professional work.

Electrical Engineering has to do with the design and construction of electrical machinery and the various applications of electricity to the arts. Electrical and Mechanical Engineering are so closely interrelated that the courses of the first three years are the same, and it is only the Senior courses, such as Telephony and pure Electrical Design that are differentiated from the Mechanical Engineering courses.

Mechanical Engineering may be divided into three closely related lines, Design, Manufacturing and Power Generation. The courses in Design begin with mechanical drawing and continue with a study of mechanisms, strength of materials, stresses, adaptability, cost, and commercial worth of machines. Manufacturing has to do with the organization of commercial enterprise, systems of works management, efficiency systems, cost of materials and power and layout of machinery in a factory for maximum output. The subject of Power Generation is covered by courses on steam and gas engines, turbines, boilers, water motors and electrical generators, together with the proper operation of all classes of machinery and the application of power to them.

GRADUATE DEGREES

For the degrees of Chemical Engineer (Ch. E.), Civil Engineer (C. E.), Electrical Engineer (E. E.), and Mechanical Engineer (M. E.), it is required that the candidate be a graduate in the College of Engineering of this University who has been engaged in acceptable professional work for a period of not less than three years after receiving the Bachelor's degree. Candidates for these degrees must declare their candidacy and file with the Dean of the College of Engineering a detailed statement covering their professional study and experience and an outline of their proposed thesis not later than December 31st preceding the commencement at which they wish to receive the degree, and they must submit the completed thesis not later than one month prior to the date fixed for the annual conferring of degrees.

INSPECTION TRIPS

One important advantage of the University is its proximity to the many industrial establishments of the San Francisco metropolitan district and this opportunity is taken advantage of by special trips to special industries. In this way students are given a practical insight into the working of these engineering industries.

STUDENT BRANCHES:

AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Student branches of the A. S. M. E. and A. I. E. E. have been established at the University, and are open to students of Mechanical and Electrical Engineering for the discussion of current problems.

REQUIREMENTS FOR GRADUATION

In all groups of the College of Engineering, 152 credits are required for graduation. A credit is given for each one-hour recitation, or lecture, per week, carried satisfactorily for one semester, or

for three hours per week spent in laboratory, drawing room or shop. All regular students free from deficiencies in university work may register for 19 units of new work.

At least two summer vacations must be spent on engineering work before graduation. A detailed report of this work containing at least three hundred words must be handed to the Dean of the College of Engineering within one month of the opening of the first semester.

Before one is admitted to any degree a thesis must be submitted on a subject chosen by the student with the approbation of the Dean of the Faculties. It must bear on the matter studied or at least on cognate matter and must give evidence of original investigation of some engineering problem. It shall consist of no fewer than 5000 words and should be typewritten on paper 8½x11 inches. The submission of an acceptable thesis is an absolute prerequisite to admission to final examinations. The ultimate decision as to whether the effort merits the degree rests with the Committee on Theses.

Residence of at least one year immediately preceding graduation is required for the granting of any degree.

ALL BRANCHES OF ENGINEERING IN THE FRESHMAN AND SOPHOMORE YEARS

FRESHMAN YEAR

First Semester	Hrs. of Attendance Recit.	Lab.	Units	Second Semester	Hrs. of Attendance Recit.	Lab.	Units
Math. 17 (Alg., Trig.)	5		5	Math. 18 (Anal. Geom.)	5		5
Chem. 1, 2 (Inorg.)	2	6	4	Chem. 3, 4 (Inorg.)	2	6	4
G.E. 1 (Mech. Draw.)		6	2	G.E. 2 (Desc. Geom.)		6	2
English 11	3		3	English 12	3		3
Pub. Spkg. 1	1		1	Pub. Spkg. 2	1		1
G.E. 9 (R.E.I.)	1		1	G.E. 9a (R.E.I.)	1		1
Religion 1	2		1	Physics 11	2		2
Phys. Ed. A		2	½	Religion 2	2		1
*M.E. 10 (Shopwork)		6	2	Phys. Ed. B		2	½
**C.E. 1, 2 (Surv.)	2	3	3	*M.E. 11 (Shopwork)		6	2
				**C.E. 3 (Surveying)		3	1

SOPHOMORE YEAR

First Semester				Second Semester			
Math. 19 (Calculus)	5		5	Math. 20 (Calculus)	5		5
G.E. 7 (Tech. Mech.)	4		4	G.E. 8 (Tech. Mech.)	4		4
Physics 12, 13	2	6	4	Physics 14, 15	2	6	4
English 13	3		3	English 14	3		3
Religion 3	2		1	Religion 4	2		1
*E.E. 10 (Electr.)		3	1	*E.E. 11 (Electricity)		3	1
*M.E. 15 (M.E. Lab.)		6	2	*M.E. 4 (Mach. Draw.)		6	2
**C.E. 14 (Curves, etc.)	1		1	**C.E. 16 (Adv. Surv.)	1		1
**C.E. 15 (Highway, etc.)		6	2	**C.E. 17 (Topog. Surv.)		6	2
~~***Chem. 21, 22 (Org.)~~	~~2~~	~~6~~	~~4~~	~~***Chem. 23, 24 (Org.)~~	~~2~~	~~6~~	~~4~~

* For students in Electrical and Mechanical Engineering.
** For students in Civil Engineering.
~~*** For students in Chemical Engineering.~~

CHEMICAL ENGINEERING

JUNIOR YEAR

First Semester				Second Semester			
Chem. 101, 102 (Qt. An.)	1	9	4	Chm.103,104 (Phy.Chm.)	2	6	4
M.E. 105 (Mach. Des.)		6	2	M.E. 106 (Mach. Des.)		6	2
M.E. 118 (Heat Power)	2		2	M.E. 119 (Heat Power)	3		3
Phys. 104 (Elect. Meas.)		3	1	M.E. 116 (M.E. Lab.)		3	1
E.E. 101 (Elect. Engrg.)	3		3	E.E. 102 (Elect. Engrg.)	3		3
E.E. 109 (E.E. Lab.)		3	1	E.E. 110 (E.E. Lab.)		3	1
G.E. 109 (Mech.of Mat.)	5		5	G.E. 121 (Hydraulics)	4	3	5
Philosophy 111	3		3	Philosophy 112	3		3
Religion 101	2		1	Religion 102	2		1

SENIOR YEAR

First Semester			Second Semester		
Chm. 105 (Indus. Chem.)	6	2	Chem. 170 (Seminar)		4
E.E. 111 (E.E. Lab.)	6	2	M.E. 123 (Ind. Engrg.)	2	2
M.E. 117 (M.E. Lab.)	6	2	E.E. 104 (Alt. Curr.)	3	3
M.E. 120 (Thermo.)	3	3	G.E. 127 (Seminar)	1	1
E.E. 103 (Alt. Curr.)	3	3	G.E. 134 (Indus. Engrg.)	2	2
G.E. 133 (Indus. Engrg.)	3	3	Law 91 (Bus. Law)	1	1
Philosophy 113	3	3	Philosophy 114	3	3
Religion 103	2	1	Religion 104	2	1

CIVIL ENGINEERING

JUNIOR YEAR

First Semester				Second Semester			
C.E. 118 (Graphics)		6	2	E.E. 114 (Electricity)	1	3	2
C.E. 119 (Fnd. & Subs.)	2		2	C.E. 121 (Struct. Anal.)	3		3
C.E. 120 (Struct. Anal.)	2		2	C.E. 150 (Hiway Eng.)	2		2
C.E. 130 (Mat. of Cnst.)	2		2	C.E. 151 (Highway Lab.)		6	2
G.E. 110 (Mat.Test.Lab.)		3	1	G.E. 121 (Hydraulics)	4	3	5
Math. 116 (Diff. Equt.)	2		2	Philosophy 112	3		3
G.E. 109 (Mec. of Mat.)	5		5	Religion 102	2		1
Philosophy 111	3		3				
Religion 101	2		1				

CIVIL ENGINEERING

SENIOR YEAR

First Semester	Hrs. of Attendance Recit.	Lab.	Units
Geology 33	3		3
C.E. 122 (Struct. Des.)	2		2
C.E. 123 (Str. Des. Lab.)		9	3
C.E. 131 (Reinf. Concr.)	3		3
C.E. 140 (Sewerage)	3		3
G.E. 133 (Indus. Engrg.)	3		3
Philosophy 113	3		3
Religion 103	2		1

Second Semester	Hrs. of Attendance Recit.	Lab.	Units
C.E. 124 (Str. Des. Lab.)		9	3
C.E. 141 (Water Supply)	3		3
C.E. 160 (Ry. Constr.)	3		3
C.E. 180 (Thesis)			2
Law 91 (Bus. Law)	1		1
G.E. 127 (Seminar)	1		1
Philosophy 114	3		3
Religion 104	2		1
Option	2		2

SENIOR OPTIONS

C.E. 132 (Reinf. Concr.)	2	2
C.E. 142 (Irrig. Engrg.)	2	2
C.E. 152 (Hy.Adm.&Fin.)	2	2
C.E. 153 Munic. Engrg.)	2	2
C.E. 170 (Tunneling)	2	2

ELECTRICAL AND MECHANICAL ENGINEERING

JUNIOR YEAR

First Semester			Second Semester		
M.E. 118 (Heat Power)	2	2	C.E. 100 (Surveying)	3	1
Phys. 104 (Elect. Meas.)	3	1	M.E. 119 (Heat Power)	3	3
M.E. 105 (Mach. Des.)	6	2	M.E. 106 (Mach. Des.)	6	2
E.E. 101 (Elect. Engrg.)	3	3	E.E. 102 (Elect. Engrg.)	3	3
E.E. 109 (E.E. Lab.)	3	1	E.E. 110 (E.E. Lab.)	3	1
G.E. 110 (Mat.Test.Lab.)	3	1	M.E. 116 (M.E. Lab.)	3	1
Math. 116 (Diff. Equat.)	2	2	G.E. 121 (Hydraulics)	3	5
G.E. 109 (Mech. of Mat.)	5	5	Philosophy 112	3	3
Philosophy 111	3	3	Religion 102	2	1
Religion 101	2	1			

ELECTRICAL ENGINEERING

SENIOR YEAR

First Semester			Second Semester		
E.E. 106 (Electr. Des.)	6	2	E.E. 107 (Pwr. Plt. Des.)	6	2
C.E. 125 (Struct. Des.)	1 6	3	E.E. 108 (Elect. Des.)	6	2
M.E. 120 (Thermo.)	3	3	E.E. 116 (Radio)	2	2
E.E. 103 (Alt. Curr.)	3	3	E.E. 104 (Alt. Curr.)	3	3
E.E. 111 (E.E. Lab.)	6	2	E.E. 112 (E.E. Lab.)	6	2
G.E. 133 (Indus. Engrg.)	3	3	E.E. 170 (Thesis)		2
Philosophy 113	3	3	G.E. 134 (Indus. Engrg.)	2	2
Religion 103	2	1	Law 91 (Bus. Law)	1	1
			G.E. 127 (Seminar)	1	1
			Philosophy 114	3	3
			Religion 104	2	1

MECHANICAL ENGINEERING

SENIOR YEAR

First Semester			Second Semester		
M.E. 107 (Mach. Des.)	6	2	M.E. 108 (Pwr. Plt. Des.)	6	2
C.E. 125 (Struct. Des.)	2 3	3	M.E. 117a (M.E. Lab.)	6	2
M.E. 117 (M.E. Lab.)	6	2	M.E. 107a (Mach. Des.)	6	2
M.E. 120 (Thermo.)	3	3	E.E. 116 (Radio)	2	2
E.E. 103 (Alt. Curr.)	3	3	E.E. 104 (Alt. Curr.)	3	3
G.E. 133 (Indus. Engrg.)	3	3	M.E. 121 (Gas Eng.)	2	2
Philosophy 113	3	3	M.E. 170 (Thesis)		2
Religion 103	2	1	G.E. 127 (Seminar)	1	1
			G.E. 134 (Indus. Engrg.)	2	2
			Law 91 (Bus. Law)	1	1
			Philosophy 114	3	3
			Religion 104	2	1

COLLEGE OF LAW

INTRODUCTION

The purposes of the College of Law are:

To give a thorough training in the fundamental principles of English and American Law, and the modification thereof peculiar to the State of California;

To guide the student by actual practice in office work and court procedure to a proper application of the principles of law to concrete cases;

Finally, to imbue the student with the correct ethical principles that should govern the legal profession.

The method of instruction followed in the Case System—an exact discussion of the cases presented in the best manuals with a view to deriving the principles which have determined their decisions. This study of rules and principles is never lost sight of by the professor and is rigidly exacted from the student in all examinations.

Lectures on particular phases of the law are given from time to time by the Faculty and by occasional lecturers.

The Faculty strongly recommend all students to take advantage of these courses because they are of great value in developing the reasoning faculties and in grounding the student in sound principles of ethical conduct—two things absolutely necessary to the soundest and highest success in the legal profession.

The College of Law maintains a system of practice courts which is modeled essentially on the California system of courts of record, and is presided over by members of the Faculty.

The court holds weekly sessions at which business is transacted in the manner usual before state courts, with the constant instruction, advice and correction of the presiding judges. On given statements of fact, student counsel issue, serve and return regular processes, prepare and file the proper pleadings according to the California Code practice, argue demurrers, impanel juries, examine witnesses, and in brief, carry their cases through from summons to final judgment.

Besides the weekly sessions of the court, an annual public competitive session known as the Coolidge Competition is held. Prizes are awarded to the winning counsel of the annual Coolidge Competition.

No student in the College of Law is allowed to take the State Examination for admission to the Bar before he has completed successfully the course of study prescribed by the University for the LL. B. degree or the Certificate in Law, and until such successful completion of the course has been certified to by the Dean of the College of Law and by the Dean of the Faculties. Immediate exclusion from the College of Law will follow any violation of this regulation.

ENTRANCE REQUIREMENTS

The College of Law is open to the following classes of students:

1. Those who have the degree of Bachelor of Arts, Bachelor of Science, or their equivalent, from this or some other college or university.

2. Those who have completed the first three years of college work either at this University or at some other college or university offering satisfactory courses leading to academic degrees.

3. Students who have followed courses in the College of Arts and Sciences at this University for three years, and who have maintained a satisfactory average, may satisfy the requirements of the Bachelor's degree in their Senior year by following the first year law courses and the courses in their major subject. Such students will then qualify for the Bachelor of Laws degree after two more years of study in the College of Law.

Students of the above classes are **regular students.**

4. Graduates of approved high schools with credits of recommended grade whose experience in business or whose private study has made up for their lack of collegiate training and whose maturity and seriousness fit them, in the discretion of the Faculty, for the study of law. Such are, for example, young men employed in insurance and real estate offices, banks, railroad offices and law firms, as well as those who have studied privately and so acquired knowledge for which, because of its variety and mode of acquisition, educational institutions are unable, as a rule, to give credit. These are **special students.** The number to be admitted each year is limited by the ruling of the Association of American Law Schools.

Advanced Standing. Any person who has been in regular attendance for at least one academic year at another law school, having similar admission requirements, may in the discretion of the Faculty of the College of Law, and on such terms, with or without examination, as it may prescribe, receive credit for the work done at such other law school not exceeding in any case two years. The last year must be spent in residence in the College of Law. Such transfer students must present a transcript of record showing an average of 80 per cent or better in their previous legal studies. Otherwise they will be placed on probation during the first semester of attendance.

REQUIREMENTS FOR GRADUATION

In order to graduate or receive the certificate, the student must have completed the regular course of three years in the College of Law. This implies:

1. Credit for at least seventy-two units in the College of Law (a unit is the equivalent of one hour a week for one semester). No student is allowed a unit in any course at which he has not been present ninety per cent of the class hours, and in which his average is not at least of C grade. All courses in the College of Law are prescribed courses.

2. Fulfillment of the requirement of residence in a standard law school, the last year of which must be spent in this College of Law.

3. In addition to the above requirements, candidates for the Juris Doctor degree must pass all required tests in Roman Law, International Law, and the History of English Law.

The Degree of **Juris Doctor** will be conferred on those students who, before beginning the study of law, have the degree of Bachelor of Arts or Bachelor of Science or their equivalent from this

University or another college or university of recognized standing, and who have also satisfied the requirements set down in 1, 2 and 3 above.

The Degree of **Bachelor of Laws** will be conferred on those students:

1. Who possess academic degrees before beginning the study of law and have satisfied the requirements set down in 1 and 2 above.

2. Who have completed three years of college work leading to an academic degree and have satisfied the requirements set down in 1 and 2 above.

The **Certificate in Law** will be conferred on special students who throughout their course have satisfied the requirements set down in 1 and 2 above.

PRIZES

The American Law Book Company Prize. A set of law books awarded to the student in the course of Legal Research having the highest average.

The Bancroft-Whitney Company Prize. A set of law books awarded to the member of the Senior year in Law having the highest average.

DESCRIPTION OF COURSES

BIOLOGY

Students who wish to make Biology their major subject must complete Chemistry 5 and 6 as well as Biology 21 and 22 with at least a grade of C before beginning any of the upper division courses in Biology.

The major program must include at least 18 units of upper division courses in Biology and at least six units in either Physics or Chemistry. A grade of C must be maintained in all courses of the major, and, at the end of the senior year, each student must pass a comprehensive final examination.

15. General Histology. The cell. Epithelial, connective, muscle and nerve tissue. Circulatory and lymphatic systems. Alimentary tract. Digestive glands. Respiratory, urinary and genital system. Skin and its appendages. Eye, ear, senses of smell, touch and taste. Two hours lecture. First semester. Two units.

16. General Histology Laboratory. Laboratory course to accompany Biology 15. Six hours laboratory. First semester. Two units.

21. General Zoölogy. An introduction to the broader principles of animal biology. Topics treated to include: protoplasm, the cell, metabolism, organ systems, adaptations, inheritance, etc. The lectures are supplemented by the laboratory study of certain animal forms. Two hours lecture, six hours laboratory. First semester. Four units.

22. General Zoölogy. A continuation of Biology 21. This second semester includes a systematic survey of the animal kingdom. Two hours lecture, six hours laboratory. Second semester. Four units.

Biology 21 and 22 are prerequisite to all other courses of this department except Biology 23-24.

23-24. General Biology. An introductory course dealing with fundamental biological processes and principles. It is designed to meet the needs of those who do not plan to proceed to more advanced work in Biology. Laboratory work is designed to illustrate and supplement the lectures. Three hours lecture, three hours laboratory. Both semesters. Eight units.

101. Vertebrate Anatomy. A comparative study of the structure, organization, adaptation and classification of the vertebrate animals. In the laboratory the student dissects the dogfish, necturus and the rabbit. Two hours lecture, six hours laboratory. First semester. Four units.

102. Vertebrate Embryology. A study of the processes of cell division, gametogenesis, fertilization, cleavage, gastrulation, germ layer formation, organogenesis and the extra-embryonic membranes. In the laboratory the various phases of development as they proceed, particularly in amphibian, chick and mammal, are studied from gross material and in serial sections. Two hours lecture, six hours laboratory. Second semester. Four units.

103. Invertebrate Zoölogy. The anatomy, classification and life histories of the invertebrates. Two hours lecture, six hours laboratory. First semester. Four units.

104. History of Biology. The history of the development of Biology in its various branches to their present status, with biographical sketches of the leaders in each field. The outlook for the future. Two hours lecture. Second semester. Two units.

105. Taxonomy and Ecology. A course designed to acquaint the student with the principles of classification and ecology as evidenced by certain animal groups. Emphasis is laid upon field work. One hour lecture, three hours laboratory. First semester. Two units.

106. Taxonomy and Ecology. A continuation of Biology 105. One hour lecture, three hours laboratory. Second semester. Two units.

CHEMISTRY

Students who wish to make Chemistry their major subject must complete Chemistry 5 and 6, 9 and 10; Physics 1-4; Math. 2 and 13 with at least a grade of C before beginning any of the upper divisions courses in Chemistry.

The major program must include 24 units of upper division courses in Chemistry. A grade of C must be maintained in all courses of the major, and, at the end of the senior year, each student must pass a comprehensive final examination.

Courses in Math. 14 and 15 are strongly recommended for students choosing Chemistry as their major subject.

5. Inorganic Chemistry. A study of the fundamentals and properties of the elements and compounds with solution of problems. Includes a more thorough discussion and mastery of the laws and theories of Chemistry. Laboratory study and quiz accompany the lectures. Three hours lecture, six hours laboratory. First semester. Five units.

6. Inorganic Chemistry. A continuation of Chem. 5. The laboratory study includes a course in Qualitative Analysis consisting of a systematic analysis of cations and anions, together with quizzes and solutions of illustrative problems. Three hours lecture, six hours laboratory. Second semester. Five units.

Chemistry 5 and 6 are prerequisite to all other courses of this department except Chem. 11 and 12.

9. Quantitative Analysis. Introduction to the common methods of gravimetric and volumetric analysis. One hour lecture, six hours laboratory. First semester. Three units.

10. Quantitative Analysis. Continuation of Chem. 9. One hour lecture, six hours laboratory. Second semester. Three units.

11. General Inorganic Chemistry. Discussion of elementary principles and properties of the more important elements with their compounds. Includes a systematic study of important theories.

Laboratory and quiz to accompany the lectures. This course is designed to meet the needs of those who do not plan to proceed to more advanced work in Chemistry. Three hours lecture, three hours laboratory. First semester. Four units.

12. General Inorganic Chemistry. A continuation of Chem. 11. Three hours lecture, three hours laboratory. Second semester. Four units.

21. Organic Chemistry. A study of the compounds of carbon and their derivatives. The properties of the more important compounds are discussed, with special attention given to the aliphatic series. Two hours lecture. First semester. Two units.

22. Organic Chemistry Laboratory. Laboratory course accompanying Chemistry 21. The typical cyclic and acyclic compounds are prepared and their properties investigated. Six hours laboratory. First semester. Two units.

23. Organic Chemistry. A continuation of Chemistry 21. Two hours lecture. Second semester. Two units.

24. Organic Chemistry Laboratory. A continuation of Chemistry 22. Six hours laboratory. Second semester. Two units.

105. Industrial Chemistry. Various industrial plants in this vicinity using chemical engineering processes are visited, and reports are written concerning the processes. The inspection tours are made weekly, and one class hour, as arranged, is devoted to the discussion and criticism of the written report.
Prerequisite: Chemistry 108. Two units.

107. Organic Chemistry. Introduction to the aliphatic and aromatic compounds of carbon, with laboratory preparations of compounds illustrating the principles. Three hours lecture, nine hours laboratory. First semester. Six units.

108. Physical Chemistry. Introduction to Physical Chemistry. Those parts having important applications in the medical sciences are stressed. Laboratory work principally in use and application of scientific instruments. Three hours lecture, nine hours laboratory. Second semester. Six units.

109. Advanced Inorganic Chemistry. Topics of Inorganic Chemistry, as the periodic system, the rare earths and others are critically studied. Laboratory work may be arranged. Three hours lecture. First semester. Three units.

110. Electrochemistry. A detailed study of the various electrical phenomena of interest to advanced students in Chemistry. Three hours lecture. Second semester. Three units.

111. Methods of Research. Introduction to the methods of research; the use of the literature of chemistry and the study of the methods of famous scientists. Two hours lecture; three hours laboratory. First semester. Three units.

112. Methods of Research. Continuation of Chem. 111. Two hours lecture; three hours laboratory. Second semester. Three units.

170 Seminar. Principally thesis work with discussion of assigned topics in theoretical and applied chemistry. Four units.

CIVIL ENGINEERING

1. Plane Surveying. Theory, use, and adjustment of tape, compass, level, and transit. Land and city surveying. Plotting field notes and computation of areas. Breed and Hosmer: Principles and Practice of Surveying, Vol. 1. Two hours lecture. First semester.
Prerequisite: Math. 17. Two units.

2. Surveying. Field work in the use of the chain, compass, level, and transit. Field notes and methods. To be taken concurrently with C. E. 1. Pence and Ketchum: Surveying Manual. Three hours laboratory. First semester.
Prerequisite: Math. 17. One unit.

3. Surveying. Continuation of C. E. 2. Pence and Ketchum: Surveying Manual. Three hours laboratory. Second semester.
Prerequisite: C. E. 2. One unit.

14. Curves and Earthwork. Simple, compound, reverse and transition curves. Measurement and computation of earthwork. The mass diagram and its use in the computation of "haul." Searles and Ives: Field Engineering, Vols. I & II. One hour lecture. First semester.
Prerequisite: C. E. 1, 2 & 3. One unit.

15. Highway and Railway Surveying. Field work in simple, compound, reverse, and transition curves. Complete survey notes and a map for a short railway or highway project. To be taken concurrently with C. E. 14. Searles and Ives: Field Engineering, Vols. I & II. Six hours laboratory. First semester.
Prerequisite: C. E. 1, 2 & 3. Two units.

16. Advanced Surveying. Base line measurement and triangulation. Trigonometric, barometric, and precise leveling. Use of the plane table. Topographic and hydrographic surveying. Field astronomy. Breed and Hosmer: Principles and Practice of Surveying, Vol. II. One hour lecture. Second semester.
Prerequisite: C. E. 1. One unit.

17. Topographical Surveying. Field work with the plane table. Survey of a small area with transit and stadia and the platting of the field notes. Practice in stellar and solar observations. To be taken concurrently with C. E. 16. Breed and Hosmer: Principles and Practice of Surveying, Vol. II. Six hours laboratory. Second semester.
Prerequisite: C. E. 1, 2 & 3. Two units.

100. Plane Surveying. Use and adjustment of tape, level, and transit. For Electrical and Mechanical Engineers. Pence and Ketchum: Surveying Manual. Three hours laboratory. Second semester. One unit.

118. Graphics. Principles and methods. Application to roof trusses under dead, snow and wind loads. Complete stresses for triangular and crescent trusses. Unsymmetrical loads for trusses. Bridge trusses. Ketchum: Steel Mill Buildings. Six hours laboratory. First semester. Two units.

119. Foundations and Substructures. Soil investigation and excavation methods. Cofferdams, open and pneumatic caissons. Use of timber, concrete, and sheet piling. Design of footings, bridge piers, and abutments. Hool and Kinne: Foundations, Abutments and Footings. Two hours lecture. First semester. Two units.

120. Structural Analysis. Determination of stresses in framed structures. Roof trusses. Stress analysis of horizontal and inclined cord bridge trusses for dead, live, impact and wind loads. Lateral trusses and portal bracing. Deflection of trusses, and secondary stresses. Statically indeterminate frames. Hool and Kinne: Stresses in Framed Structures. Two hours lecture. First semester. Two units.

121. Structural Analysis. Continuation of C. E. 120. Hool and Kinne: Stresses in Framed Structures. Three hours lecture. Second semester. Three units.

122. Structural Design. The design of steel and timber roof trusses, plate girders, highway and railway bridges. Hool and Kinne: Steel and Timber Structures. Two hours lecture. First semester. Two units.

123. Structural design. The design and detailing of a roof truss, plate girder, and a railway or highway bridge. Design and detailing of reinforced concrete structures. To be taken concurrently with C. E. 122. Hool and Kinne: Steel and Timber Structures. Carnegie's Pocket Companion, or Steel Construction by A. I. S. C. Nine hours laboratory. First semester. Three units.

124. Structural Design. Continuation of C. E. 123. Hool and Kinne: Steel and Timber Structures. Carnegie's Pocket Companion, or Steel Construction by A. I. S. C. Nine hours laboratory. Second semester. Three units.

125. Structural Design. The design and detailing of wood, steel, and concrete structures suitable for the Electrical and Mechanical Engineer. Bishop: Structural Drafting and Design. One hour lecture, six hours laboratory. First semester. Three units.

130. Materials of Construction. The manufacture and properties of the more common materials of engineering construction. Cementing materials, concrete and stone, clay products, timber and metals. Moore: Materials of Construction. Two hours lecture. First semester. Two units.

131. Reinforced Concrete. Principles and practice of reinforced concrete design as applied to beams, girders, floor slabs and columns. Hool: Reinforced Concrete Construction, Vol. I. Three hours lecture. First semester. Three units.

132. Reinforced Concrete. Principles and practice of reinforced concrete building design and construction. Hool: Reinforced Concrete Construction, Vol.II. Two hours lecture. Second semester. Two units.

140. Sewerage. Collection, purification and disposal of sewage. The design and construction of sewers and sewage treatment works. Metcalf and Eddy: Sewerage and Sewage Disposal. Three hours lecture. First semester. Three units.

141. Water Supply. A study of the source, the quality and quantity of water necessary for a municipal supply. Water supply works for the collection, purification and distribution of water. Turneaure Russell: Public Water Supply. Three hours lecture. Second semester. Three units.

142. Irrigation Engineering. Collection, storage, and distribution of water. Application of water to the land. Operation and maintenance of irrigation systems. Davis-Wilson: Irrigation Engineering. Two hours lecture. Second semester. Two units.

150. Highway Engineering. Design, construction and maintenance of roads and pavements. Alignment, grade and drainage of roads. Gravel, stone, concrete, block and sheet pavement types. Agg: Construction of Roads and Pavements. Two hours lecture. Second semester. Two units.

151. Highway Tests. Highway materials testing. Cement, sand, gravel, rock, and bituminous materials. Bauer: Highway Materials. Bulletin No. 1216, U. S. Dept. of Agriculture, Tentative Standard Methods of Sampling and Testing Highway Materials. Six hours laboratory. Second semester. Two units.

152. Highway Administration and Finance. A study of the management and economic phases of highway engineering. Organization and administration of highway department staffs. Highway finance, federal aid, bonds, and special assessments. Agg and Brindley: Highway Administration and Finance. Two houre lecture. Second semester. Two units.

153. Municipal Engineering. Problems of the city engineer. City planning, disposal of city wastes, street cleaning and lighting, parks and waterways. Folwell: Municipal Engineering Practice. Two hours lecture. Second semester. Two units.

160. Railway Construction. Methods and practice of railway construction and maintenance. Standard railway structures, trestles, culverts, minor bridges, tunnels, ballast, rails and fastenings, terminals and yards. Webb: Railroad Construction. Three hours lecture. Second semester. Three units.

170. Tunneling. Transportation, water and mine tunnels. Methods of construction under various soil conditions. Tunnel machinery, drilling, blasting and mucking. Tunnel lining and ventilation. Burton and Davies: Modern Tunneling. Two hours lecture. Second semester. Two units.

180. Thesis. Original investigation of some engineering problem. Two units.

ECONOMICS

Students who wish to make Economics their major subject must have completed Economics 15 and 16, also 1A and 1B of the lower division with a grade of at least C.

The major program must include 19 units of upper division work in economics including Economics 100, 110 and 115. Besides the units in economics the student must include six upper division units in history or political science. A grade of C must be maintained in all courses of the major, and, at the end of the senior year, each student must be ready to pass a comprehensive final examination, written or oral.

1A-1B. Principles of Economics. Required for all upper division work in Economics and in the College of Business Administration. The student is made acquainted with the general principles, terminology and methods of approach essential to an understanding of economic processes and problems. The work of the course centers around the four dominant phases of economics: consumption, production, exchange and distribution. Ely: Outlines of Economics (5th ed.). Three hours lecture. Two semesters. Six units.

10-A. Principles of Accounting. A study of the basic principles of modern accounting with particular emphasis on the mechanical and technical aspects of recording actual business transactions. McKinsey: Accounting Principles. Three hours lecture, three hours laboratory. First semester.
Prerequisite: Sophomore standing. Four units.

10-B. Principles of Accounting. A continuation of Econ. 10-A. Special attention is given to fundamental matters relating to sole proprietors, partnerships and corporations. Three hours lecture, three hours laboratory. Second semester.
Prerequisite: Econ. 10-A Four units.

15. Economic History of Europe. A general survey of the economic development of Europe from the eleventh century to modern times, emphasizing trends that may serve as a background for a better understanding of modern economic and business problems. Knight, Barnes and Flugel: Economic History of Europe. Three hours lecture. First semester. Three units.

16. Economic History of America. A study of the economic history of the United States, with special reference to problems arising from the factory system and large scale production. Bogart: Economic History of the American People. Three hours lecture. Second semester. Three units.

100. Statistics. Presents methods of statistical information, averages, the effect of chance on the reliability of statistical data and correlation as applied to economic statistics.

Along with the above a laboratory course for the drawing of graphs suggested by the general course. Chaddock: Principles and Methods of Statistics. Chaddock and Croxton: Exercises in Statistical Methods. Three hours lecture, three hours laboratory. First semester. Four units.

110. History of Economic Doctrines. A survey of economic theories and doctrines from Plato to Alfred Marshall. The various types of theory are compared and contrasted and their relationship to the general economic and social history of the period is indicated. Haney: History of Economic Thought. Three hours lecture. First semester.

Prerequisite: Junior standing. Three units.

114. Advanced Economic Theory. A study of the more advanced theories of economics. Three hours. One semester.

Prerequisite: Econ. 1A-1B. Three units.

115. Contemporary Economic Theory. Especially distinguishing new trends of economic thought from proposals of a more or less transitory nature. Readings and lectures. Three hours. Second semester.

Prerequisite: Senior standing. Three units.

120. Public Finance. A history of public finance and taxation in the United States from colonial times to the present, emphasizing the economic merits of the different means of collecting public revenue. Lutz: Public Finance. Three hours lecture. First semester. Three units.

122. Principles of Money and Banking. Approximately one third of the course is devoted to a study of money; its history, kinds of, functions and systems of in the United States. The remainder of the course is devoted to a general consideration of banking with emphasis upon the National Banking System and the Federal Reserve System. Holdsworth: Money and Banking. Three hours lecture. Second semester. Three units.

150. Labor Economics. A study of the development of the labor situation in the United States, the forms, aims and methods of action of present day labor organizations, and legislation in labor matters. Watkins: Introduction to Labor Problems. Three hours lecture. Second semester. Three units.

180. Foreign Trade. The principles and practices of foreign trade; present problems in international financial relations, and their influence upon the foreign trade of the United States. Griffin: Principles of Foreign Trade. Three hours lecture. Second semester. Three units.

181. Principles of Marketing. The nature and importance of marketing; producer and consumer clarifications; extent of and forces behind markets; marketing functions; cooperative marketing; methods and channels of distribution; the transportation problems connected with marketing; market price; government authority; trend of marketing methods and policies at present. Converse: Principles of Marketing. Three hours lecture. First semester. Three units.

Business Courses

The following courses are open only to students registered in the College of Business Administration. Economics 1A-1B and Junior standing are prerequisite for all the following courses:

121. Corporation Finance. The first six weeks of the semester are devoted to the survey of the forms of business organization; the individual proprietorship, the partnership, joint stock company and the corporation. The remainder of the semester is occupied with a detailed study of the corporation; methods and instruments of corporate financing primarily from the viewpoint of the corporation and its stockholders. Three hours lecture. First semester.
Three units.

123. Investments. The relative merits of the various types of investments from the point of view of the individual or private investor. Methods of analyzing and determining the investment value of corporate and other securities. Badger: Principles of Investment. Three hours lecture. Second semester. Three units.

124. Advanced Money and Banking. The first part of the course includes a detailed analysis of the actual operation of the Federal Reserve System and a comparative survey of the most important foreign systems. The latter part of the semester is devoted to an advanced study of monetary and banking theory. Readings and lectures. Two hours. Second semester. Two units.

125. Elements of Foreign Exchange. The methods of banking and financing followed in international trade. Detailed consideration of commercial paper used in foreign trade. Also considers gold movements between countries, and their effects on the currency, banking and general business. Cross: Foreign Exchange. Three hours lecture. One semester.
Prerequisite: Econ. 122. Three units.

126. Business Cycles. A study of the history of periods of business depression and prosperity; phenomena attending such fluctuations; and a consideration of various means suggested for the attainment of a greater degree of stability in business. Mitchell: Business Cycles—The Problem and its Setting. Three hours lecture. One semester. Three units.

130-A. Accounting Problems. A study of the methods of preparing operating financial statements for various types of enterprises. The problems peculiar to consignments, ventures, agencies, branches, and corporations are given special attention. Illustrative problems solved and discussed. Finney: Principles of Accounting, Vol. I. Three hours lecture. First semester.
Prerequisite: Econ. 10-B. Three units.

130-B. Accounting Problems. A study is made of the following: Problems of partnerships and insolvent concerns; statements accounting for profit variation and fund application; principles of current asset valuation. Three hours lecture. Second semester.
Prerequisite: Econ. 130-A. Three units.

131-A. Accounting Problems. The course covers the problems of estate accounting, principles of fixed asset valuation and depreciation, valuation of intangible assets, and the problems of reserves and funds. Finney: Principles of Accounting, Vol. II. Three hours lecture. First semester.
Prerequisite: Econ. 130-B. Three units.

131-B. Accounting Problems. A study is made of the problems of corporate consolidations, foreign exchange transactions, fixed and current liability items, and fire and life insurance. Three hours lecture. Second semester.
Prerequisite: Econ. 131-A. Three units.

133. Industrial Accounting. A study of the fundamental principles of allocating cost and overhead in modern industry. Walton: Cost Accounting. Three hours lecture. Second semester.
Prerequisite: Econ. 10-B. Three units.

135. Analysis of Financial Statements. A course covering the methods of interpreting, for the use of management, the data presented in the typical financial reports prepared from accounting records. Readings and lectures. Three hours. First semester.
Prerequisite: Econ. 130-B. Three units.

137. Accounting Theory. A seminar course in which attention is given to present day trends in accounting theory as evidenced by current writings and as drawn from published reports prepared by Certified Public Accountants. Paton: Accounting Theory. Canning: Economics of Accountancy.
Prerequisite: Consent of instructor. Units to be arranged.

139. Federal Income Taxes. A study of the practical application of the principles underlying the current income tax laws and the regulations issued thereunder. Problems are discussed and actual returns prepared for both individuals and corporations. Prentice-Hall: Federal Tax Course. Three hours lecture. Second semester.
Prerequisite: Econ. 10-B. Three units.

182. Advanced Marketing. An amplification of the work covered in Elementary Marketing. Special research upon wholesale and retail merchandising problems. Analysis of present trends and probable changes in marketing methods. Readings and lectures. Two hours. First semester.
Prerequisite: Econ. 181. Two units.

EDUCATION

A, B. Prescribed Physical Training for Freshmen. All Freshmen who are in no way physically defective are required to meet twice a week for physical training. Those who do regular work in baseball, basketball, boxing, football, swimming or tennis are exempt from the physical training classes. Two hours weekly throughout the year. One unit.

6. A General Course in the History of Education. Primitive and oriental. Greek. Roman. Early Christian and mediaeval. Monastic schools and the development of Scholasticism. The founding of universities in the various parts of Europe. Two hours. One semester. Two units.

7. Modern Education. Continuation of Educ. 6. The Renaissance in education. The Reformation and education. The Jesuit

system of education. The great educational reformers. The development of the national school systems in Europe and the United States. Two hours. One semester. Two units.

8. **Teacher's Courses in High School English.** The rhetoric to be taught in high school. Its method of presentation and its application to written composition. Graduation and development of written composition. Methods of correction. Standards of evaluation. The literature to be studied. The method for its presentation and study. Oral English. Two hours. One semester. Two units.

ELECTRICAL ENGINEERING

10. **Electricity—The Electric Circuit.** The Magnetic Circuit. The Dielectric Circuit. Generation of Voltage, Current and Force. Electric Power. Electric Energy. Timbie and Bush: Principles of Electrical Engineering. Three hours combined lecture and laboratory. First semester.
Prerequisite: Sophomore standing. One unit.

11. **Electricity—Systems of Units.** Symbols. Indicating Instruments. The Dielectric Field. The Magnetic Field. Magnetic Properties of Iron and Steel. Timbie and Bush: Principles of Electrical Engineering. Three hours combined lecture and laboratory. Second semester.
Prerequisite: E. E. 10. One unit.

101. **Electrical Engineering—The Dynamo.** Armature Windings. Armature Reaction. Generator Characteristics. Motor Characteristics. Commutation. Losses, Efficiency, Heating and Rating. Electrolytic Conduction. Batteries. Electrolysis. Transmission and Distribution. Thermionic and Gaseous Conduction. Industrial Applications. Resuscitation. Magnusson: Direct Currents. Three hours lecture. First semester.
Prerequisite: E. E. 11. Three units.

102. **Alternating Currents—The Electric Field.** Generation of Electromotive Force. Forms of Representation. Series Circuits. Parallel Circuits. Solution of Circuits. Power Factor. Instruments. Voltage and Current in Single and Polyphase Systems. Power in Two-Phase and Three-Phase Circuits. Magnetic Hysteresis. Transformers. Induction Motors. Alternators. Magnusson: Alternating Currents. Three hours lecture. Second semester.
Prerequisite: E. E. 101. Three units.

103. **Alternating Currents—Synchronous Motors and Synchronous Condensers.** Rotary Converters. Commutator Motors. Induction Generators. Insulation. The Dielectric Circuit. Corona. Short Transmission Lines. Phase Control. Wave Forms. Harmonics. Protective Appliances. Polyphase Systems. Forms of Notation. Long Transmission Lines. Magnusson: Alternating Currents. Three hours lecture. First semester.
Prerequisite: E. E. 102. Three units.

104. Alternating Currents. Continuation of E. E. 103. Three hours lecture. Second semester. Three units.

105. Telephony. The magneto-telephone. The microphone. Carbon transmitters. Induction coils. Call methods. Series and parallel circuits. Subscribers' equipment. Line disturbances. Common battery systems. Exchange equipment. Party lines. Automatic systems. Combined telegraphy and telephony. Wireless telegraphy. Generation of electrical waves. Transmitting and receiving apparatus. Electrical Engineer's Handbook. One hour lecture. First semester.

Prerequisite: Physics 12 and E. E. 101. One unit.

106. Design of Direct Current Machinery. Electrical and mechanical theory applied to the design of D. C. machinery. Switches, heaters, controllers, etc. Complete calculations and working drawings for a dynamo or motor, to fulfill given specifications. Still: Electric Machinery Design. Six hours drawing. First semester.

Prerequisite: E. E. 101. Two units.

107. Power Plant Design. Design of a complete plant to furnish light and power for a city of given size. Consideration of the elements: illumination, charges, operating expenses, income, organization and administration, reports, specifications, contracts and statistics. Morse: Power Plant Engineering and Design. Six hours drawing. Second semester.

Prerequisite: E. E. 103-106. Two units.

108. Electrical Design. Design of alternators, transformers, induction motors and other alternating current apparatus. Thorough investigation and complete design of some unit assigned. Still: Elements of Electrical Design. Six hours drawing. Second semester. Two units.

109. Electrical Engineering Laboratory. Determination of the resistance of electrical circuits. Relation between speed, field strength and voltage Operation of shunt series and compound-wound generators. Distribution of potential around commutator. Heat runs to determine load capacity. Stray power. Starting boxes. Counter electro-motive force. Shunt, series, compound and differentially wound motors. Operation of shunt and compound wound generators in parallel. Distribution of load. Control of series circuits. Regulation of arc lamps. Constant potential and constant current generators. Ball: Laboratory Experiments in Direct and Alternating Current. Three hours laboratory. First semester.

To accompany E. E. 101. One unit.

110. Electrical Engineering Laboratory. Calibration of ammeters and voltmeters. Calibration and adjustments of A. C. and D. C. watt-hour meters. Determination of resistances. Measurement of inductance and capacity. Permeability of samples of iron and steel. Determination of hysteresis. Storage batteries. Testing. Candlepower of lamps from standard candle. Cable testing. Insulation resistance. Practice in operation of A. C. motors, gen-

erators and other apparatus. Three hours laboratory. Second semester.

To accompany E. E. 102. One unit.

111. Electrical Engineering Laboratory. Alternating current circuits. Inductance, capacity, impedance, phase, relation, true and apparent watts and power factor. Alternators. Magnetization curves. Losses of synchronous impedance. Synchronous motors. Methods of synchronizing. Methods of starting rotary converters. Compounding. Calculation of efficiency. Alternators in parallel. Transformers. Regulation. Heating and Efficiency. Use as induction regulators and phase changers. Wave shapes by instantaneous contact and by the oscillograph. Resonance. Methods of starting induction motors. Efficiency by brake tests. Operation of induction generator. Reports of complete tests on plants. Six hours laboratory. First semester. Two units.

112. Electrical Engineering Laboratory. Continuation of E. E. 111. Six hours laboratory. Second semester. Two units.

114. Electricity. A short course similar to E. E. 101 and E. E. 109 for Civil Engineering students. Gray: Electrical Engineering. One hour lecture, three hours laboratory. Second semester. Two units.

115. Electric Power Transmission. Electric principles and theory. Economic principles and calculations. Insulation of overhead lines. Transient phenomena. Underground lines. Mechanical design of transmission lines. Still: Electrical Transmission. Two hours lecture. Second semester. Two units.

116. Radio. Fundamental Ideas and Laws. Resistance, Inductance and Capacity. Laws of Oscillating Current. Spark Telegraphy. Vacuum Tubes and their operation on typical circuits. Continuous-wave telegraphy. Radio Telephony. Wavemeters and their use. Morecraft: Principles of Radio Communication. Two hours lecture. One semester. Two units.

170. Thesis. Original investigation of some Engineering problem. Two units.

ENGLISH

Students who wish to make English their major subject must have completed all the prescribed English courses of the lower division with at least a grade of C.

The major program must include 24 units of upper division English courses. A grade of C must be maintained in all courses of the major, and, at the end of the senior year, each student must pass a comprehensive final examination.

1. Freshman Rhetoric. A study of the principles of literary art in all its forms, with special attention to the mechanics of writing. Practice writing based on assigned reading. Three hours. First semester. Three units.

2. Introduction to the Study of Poetry. Its nature and kinds, especially the epic, the lyric and the drama. Practice in verse composition in imitation of authors read. Three hours. Second semester. Three units.

3. Early English Literature. A study of the beginnings of English literature, including the Saxon, Norman and Early English periods. Lectures and recitations. Three hours. First semester. Three units.

4. Elizabethan Literature. A study of the more prominent writers during the Tudor and Stuart reigns, with special emphasis on the Elizabethan period. Lectures and recitations. Three hours. Second semester. Three units.

5-6. Argumentation and Oratory. Invention, arrangement and development of thought; a course presenting the principles of reasoning and persuasion. Critical analysis and discussion of classic specimens of oratorial composition, ancient and modern. Three hours. Two semesters. Six units.

7. Georgian Literature. English Literature from the time of Queen Anne to that of Queen Victoria. Lectures and recitations. Three hours. First semester. Three units.

8. Victorian and Modern English Literature. A study of the leading writers from the reign of Queen Victoria down to the present, including contemporary American writers. Lectures and recitations. Three hours. Second semester. Three units.

Courses 11-14 are designed for students in the College of Engineering.

11. Composition and Rhetoric. Lectures and recitations. Exposition; the unity and coherence of the whole composition, with a thorough review of the paragraph, the sentence and the right choice of words. The nature of Argumentation, including the invention and arrangement of material. Appropriate readings. Three hours. First semester. Three units.

12. Composition and Rhetoric. Continuation of English 11. The characteristics of Description and Narration. Expository description: description in narrative pieces. Simple Narrative. The Story. Illustrative readings. Three hours. Second semester. Three units.

13. Readings in English Literature. Selected readings in the Early English and Elizabethan periods, with adequate biographical and critical study of the principal authors. Three hours. First semester.
Prerequisite: Eng. 12. Three units.

14. Readings in English Literature. Continuation of English 13. Selected readings in the Georgian, Victorian and Modern English periods, including contemporary English and American writers. Three hours. Second semester. Three units.

21. Journalism. News writing and reporting. A study of news values and sources of news; structure and style in news stories; feature writing. Lectures and discussions. Practice and laboratory work. Two hours. Second semester. Two units.

101. The Essay. An advanced course in the study of the essay. Its nature and kinds. Forerunners of the essay. The essay in English with readings in representative English and American essayists down to the present. Three hours. One semester. Three units.

102. Fiction. The nature and kinds of fiction, illustrated by ancient and modern forms in verse and prose. Plot, setting, characters. Special emphasis on modern prose forms. The novel and the short story with appropriate readings. Three hours. One semester. Three units.

103. Shakespeare. A study of the historical background and the influence of Shakespeare in the development of English dramatic literature. Intensive study of at least four plays with further plays assigned for more rapid reading. Three hours. One semester. Three units.

104. Milton. His background and spirit. Contrast with Dante, Virgil and Homer. Selections from his prose. His principal minor poems. Comus. Paradise Lost. Three hours. One semester. Three units.

105. Chaucer. Chaucer's medieval background. Dawning influence of the Renaissance. Relation to later English literature. Diction. Versification. Literary characteristics. Readings from Canterbury Tales and from earlier and later minor poems. Three hours. One semester. Three units.

106. Nineteenth Century Poetry. An advanced course based on the study and interpretations of selections from the principal English poets of the nineteenth century. Three hours. One semester. Three units.

107. Nineteenth Century Prose. An intensive study of a select number of English nineteenth century writers of non-fictional prose. Their subject matter, mental traits and qualities of style. Three hours. One semester. Three units.

108. American Literature. Its historical development briefly reviewed. Points of comparison and contrast with other literatures. Readings from the principal American poets and prose writers. Three hours. One semester. Three units.

FRENCH

1. Elementary French. In this course the student is carefully drilled in elementary grammar up to the irregular verbs, attention also being given to acquiring a vocabulary of the more common words. Three hours. First semester. Three units.

2. Elementary French. A continuation of French 1. Special attention is given to the more important irregular verbs, the memori-

zing of words, and translation of French into English and vice versa. Three hours. Second semester. Three units.

3. Intermediate French. A thorough review of grammar and syntax. The object of this course is to acquaint the student with the general vocabulary and enable him to read the more simple French writers. Three hours. First semester.

Prerequisite: French 2. Three units.

4. Intermediate French. This course continues the work begun in French 3. Regular exercises are given in written work, and copious reading is made from the standard works in order to fit the student for professional reading. Three hours. Second semester. Three units.

5-6. Advanced Composition and Reading. Compositions and sight reading; oral and written reports in French; conversation; survey of French literature. This course is conducted almost entirely in French. Three hours. Both semesters. Six units.

GENERAL ENGINEERING

1. Mechanical Drawing. Freehand lettering. Use of instruments. Plane problems. Freehand sketching. Orthographic. isometric and cabinet projections. Tracing and blue printing. French: Engineering Drawing. Six hours drawing. First semester. Two units.

2. Descriptive Geometry. Orthographic projection of points, lines, planes, warped surfaces, etc., in the four angles of projection. Intersections. Tangents to curves and surfaces. Developments. Practical problems in stereotomy, surveying, architecture, belting, layouts, etc. Smith: Practical Descriptive Geometry. Six hours lecture and drawing. Second semester.

Prerequisite: G. E. 1. Two units.

7. Technical Mechanics. General theories and principles concerning matter, inertia, space and time, motion, velocity and acceleration. Momentum. Force. Measures. Comparison and representation of force. Static: Composition and resolution and concurring forces. Conditions of equilibrium. Composition and resolution of forecasting on a rigid body. Center of gravity. Friction. Virtual velocities. Machines. Funicular polygon. Attractions. Rectilinear and curvilinear motion. Kinetics. Laws of motion. Motion under the action of a variable force, and a resisting medium. Central forces. Constrained motion. Impact. Work and energy. Moments of inertia. Rotary motion. Motion of a system of rigid boilers in space. Effort is made throughout the course to direct the attention of the student to practical application of mathematical deductions. This course must accompany Physics 12 and 13. Seely and Ensign: Analytical Mechanics for Engineers (2nd ed.). Four hours lecture. First semester.

Prerequisite: Math. 18. Four units.

8. Technical Mechanics. Continuation of G. E. 7. Text as in G. E. 7. Four hours lecture. Second semester. Four units.

9. Review of Engineering Industries. Lectures and assigned reading on Engineering studies and work. This course is designed

to teach the student how to study and to enable him to make a rational choice of a course of study. One hour lecture. First semester. One unit.

9a. Review of Engineering Industries. Continuation of G. E. 9. One hour lecture. Second semester. One unit.

109. Mechanics of Materials. Resistance and elasticity of materials. Pipes, cylinders and riveted joints. Simple and cantilever beams. Restrained and continuous beams. Columns, shafts and girders and their design. Torsion in shafts. Combined stresses. Strength and resilience of materials. Tension and compression. Flexure of beams. Shear and torsion. Apparent and true stresses. Plates, spheres and columns. Analytical and graphical methods used in the solution of problems. Seeley: Resistance of Materials. Five hours lecture. First semester.

Prerequisite: Math. 15 and G. E. 8. Five units.

110. Materials Testing Laboratory. Tests of iron, steel, wood and concrete in tension, compression, shear, bending and torsion. Rattler tests on brick, and standard tests on road materials. Hatt & Schofield: Laboratory Manual of Testing Materials. Selected A. S. T. M. Standards for Students. Three hours laboratory. First semester.

To accompany G. E. 109. One unit.

121. Hydraulics. Fundamental data. Hydrostatics. Theoretical hydraulics. Instruments and observations, especially meters and pressure gauges. Flow through orifices, over weirs, through tubes and pipes, in conduits and in rivers. Water supply and water power. Dynamic pressure of water. Water wheels. Overshot, breast, undershot, vertical impulse, horizontal impulse and downward flow impulse wheels. Special forms of wheels. Turbines. Classification. Theory and design of turbines. Downward-flow and impulse turbines. Special devices. Naval hydro-mechanics. Pumps and pumping. Force and centrifugal pumps. Pumping engines. Other kinds of pumps. Pumping through pipes and through hose. Hydraulic motors. Hydraulic-electric analogies. Stress is laid upon the effect of hydraulic laws upon engineering construction or under water, especially in problems involving the impounding of water or oil. King and Wisler: Hydraulics. Four hours lecture, three hours laboratory. Second semester. Five units.

127. Seminar. Reading and reports from current Engineering literature. One hour. Second semester. One unit.

133. Management Engineering. The background of industry. Industrial ownership. Production, distribution and consumption of wealth. Engineering economy. Problems of financing. Labor and industry. Position of the engineer in modern organization. Duties. Estimates and specifications. Definiteness. Principles of organization. Coördination and executive control. Time and motion study. Inspection. Principles of cost finding. Measures of management. Industrial relations. Science in industry. Kimball: Principles of Industrial Organization, and references. Three hours lecture. First semester. Three units.

134. Management Engineering. Continuation of G. E. 133. hours lecture. Second semester. Two units.

GEOLOGY

1. General Geology. A popular course of visual instruction to give the student an intelligent appreciation of the physiographic relief features of the earth and an insight into the probable conditions of the origin and formation of various geologic phenomena. Lectures, stereopticon projections, and supervised discussion. Two hours. One semester. Two units.

2. Historical Geology. Visual instruction regarding theories of earth formation. Paleontology. Special study of fossils with access to large museum. Lectures on geologic aspects of evolution. Two hours. One semester. Two units.

33. Engineering Geology. A course in dynamical, structural and historical Geology. Particular attention is paid to structural Geology and the influences of constructive and engineering conditions. The student is made familiar with different stones by illustrating each recitation with specimens of the particular rocks treated, as well as their adaptability in construction, method of occurence, etc. Ries and Watson: Engineering Geology. Three hours lecture. First semester. Three units.

34. Mineralogy. A course in Mineralogy with access to a large collection of specimens. Determination of unlabeled specimens. Crystallography. Blowpipe analysis. Includes a short course in Metallurgy. Iron ores and production of iron and steel. Percentage and effect of sulphur, silicon manganese and carbon in iron and steel. Coals, coke, carbons and ash. Three hours lecture. Second semester.
Prerequisite: Geology 1. Three units.

GERMAN

1. Elementary German. Elements of German grammar. Drill in pronunciation. Vocabulary. Three hours. First semester.
Three units.

2. Elementary German. A continuation of German 1. Syntax. Oral and written exercises. Reading from more simple German prose. Three hours. Second semester. Three units.

3. Intermediate German. Review of syntax. Translation. Oral and written exercises. Reading of somewhat difficult German prose. Three hours. First semester.
Prerequisite: German 2. Three units.

4. Intermediate German. Reading, written and oral exercises. This course aims at preparing the student to read the more difficult German writers. Three hours. Second semester.
Prerequisite: German 3. Three units.

5-6. Advanced Composition and Reading. Composition; sight reading; oral and written reports in German; conversation; historical survey of German literature. This course is conducted almost entirely in German. Three hours. Both semesters. Six units.

GREEK

1. **Elementary Greek.** The course is intended for those who enter without Greek. Grammar; simple prose selections; composition. Three hours. First semester. Three units.

2. **Elementary Greek.** A continuation of Greek 1. Readings from Xenophon: Anabasis, with prose composition based on Xenophon. Three hours. Second semester. Three units.

3. **Intermediate Greek.** A continuation of the grammar, with readings and prose composition. Selected portions of the Iliad or Odyssey; Homeric Dialect; outline of Greek epic poetry. Three hours. First semester. Three units.

4. **Intermediate Greek.** A continuation of Greek 3, with special emphasis on sight reading and advanced prose composition. Three hours. Second semester. Three units.

5. **Demosthenes.** A study of the Philippics, Olynthiacs and the speech on the Crown as models of oratorical art; analysis, discussion and criticism. Three hours. One semester. Three units.

6. **Homer and Sophocles.** A study of the Iliad and Odyssey of Homer; Oedipus Tyrannus of Sophocles. Three hours. One semester. Three units.

7. **A Study of Selected Greek Lyrics.** Three hours. One semester. Three units.

8. **Plato.** Readings from Plato. An analysis, discussion and criticism of his works. Three hours. One semester. Three units.

101. Historical Survey of Greek Literature. Special emphasis on its natural growth and reflection of Greek history. Influence on Latin and Modern Literature. Three hours. One semester. Three units.

102. Greek Historical Prose. Selections from Herodotus and Thucydides. Comparison of styles and critical spirit. Three hours. One semester. Three units.

103. Aeschylus and Sophocles. A tragedy of each with special emphasis on tragic structure and metric. Three hours. One semester. Three units.

104. Euripides and Aristophanes. One play of each (probably "Medea" and "Frogs"). Attention especially to Aristophanes' criticism of Euripides, and the relation of the two men to their times. Three hours. One semester. Three units.

105. Comparative Drama. A course supposing and supplementing Greek 103-104. Special study of the evolution of dialogue, chorus and dramatic character. Lectures on the Greek Theatre and its conventions. Two hours. One semester. Two units.

106. Lysias, Isocrates. Selected speeches. A study of the growth of Attic prose. Three hours. One semester.
Prerequisite: Greek 5. Three units.

107. St. John Chrysostrom, St. Basil. Selected orations with special reference to rhetorical style. Comparison with the Attic orators. Three hours. One semester. Three units.

HISTORY

Students who wish to make History their major subject, besides completing the other required courses of the lower division, must pass the courses in History 1-2 and Political Science 1-2 with at least a grade of C.

The major program must include 24 units of upper division History courses. A grade of C must be maintained in all courses of the major and, at the end of the senior year, each student must pass a comprehensive final examination.

1-2. History of Modern Europe. A general survey of European civilization from the beginning of the sixteenth century to the present time. Political activities in the various countries. Nationalism. Protestantism and the religious wars. Later irreligious tendencies and the French Revolution. Social factors of the nineteenth century. The first half-year's work extends to the Congress of Vienna. The second half-year's work extends to the present time. Three hours. Both semesters. Six units.

101-102. The Renaissance and the Reformation. A critical study of the revival of the Old and the birth of the New Learning. Criticism of existing institutions. Rejection of the authority of the Church. The influence of this period on Italy, Germany and France. Three hours. Both semesters. Six units.

103. Europe in the Seventeenth and Eighteenth Centuries. The rise and fall of Absolutism. Development and consolidation of the national states. The growth of colonial empires. The decline of Spanish and Dutch power. The rise of England and France and the struggle for world power. Three hours. One semester. Three units.

104. The Revolutionary Period in History. A survey of the revolutionary movements in Europe from the French Revolution of 1870. The anti-Clerical movement. The effects of the Industrial Revolution. The gradual spread of the spirit of democracy. Three hours. One semester. Three units.

105-106. History of the United States. A general course dealing with the different forms of government under which the colonists were ruled. The independence of the colonists in political affairs. The efforts of the colonists to unite for mutual political protection. The protests against coercion. The Declaration of Independence. The Articles of Confederation. The Constitution. The political history of the United States. Three hours. Both semesters. Six units.

107. Europe since 1870. A study of the gradual completion of political democracy. Its application to meet social needs. Its entanglements with nationalist and imperialistic sentiment. The struggle for paramount influence in the Balkan States. Various causes of the World War. A post-war survey of the political, social and economic conditions in Europe. Three hours. One semester. Three units.

108. England under the Tudors and the Stuarts, 1485-1689. The political situation at the close of the War of the Roses. The efforts of the throne to dominate over all political, social and religious in-

stitutions. The political theories of the Stuarts. The Puritan Revolution. The civil war. The Cromwellian Period. The policy of restoration. The revolution of 1688. Three hours. One semester. Three units.

109. Greek History. Homeric Age to the Fall of Corinth. Three hours. One semester. Three units.

110. Roman History. From its beginning to Constantine. Three hours. One semester. Three units.

111. Mediæval History. Survey from the Edict of Milan to the Discovery of America. Three hours. One semester. Three units.

ITALIAN

1. Elementary Italian. Elements of Italian Grammar. Drill in Pronunciation. Vocabulary. Three hours. First semester. Three units.

2. Elementary Italian. A continuation of Italian 1. Syntax; oral and written exercises. Reading from simpler Italian prose. Three hours. Second semester. Three units.

3. Intermediate Italian. Review of grammar and syntax. Translation. Oral and written exercises. Reading of somewhat difficult Italian prose. Three hours. First semester. Three units.
Prerequisite: Italian 2. Three units.

4. Intermediate Italian. Reading, written and oral exercises. This course aims at preparing the student to read the more difficult Italian writers. Three hours. Second semester.
Prerequisite: Italian 3. Three units.

5-6. Italian Literature. A study of special periods and writers in Italian literature, with emphasis on their literary qualities. The development of fluency in Italian composition and pronunciation. An easy reading, writing and conversational knowledge of Italian is presumed. Three hours. Both semesters.
Prerequisite: Italian 4. Six units

LATIN

1. Cicero. The orations studied as methods of oratorical art; rapid reading, analysis, discussion, criticism. Latin composition based on special text and matter read in class. Three hours. First semester.
Prerequisite: High School Latin: 4 years. Three units.

2. The Epic—The Aeneid. After reading books VII-XII, the poem will be studied as a whole, special attention being given to the sources, to the epic technique and literary art of Virgil and to the tracing of his influence in the literature of the world. Narration and descriptive composition based chiefly on the text of the Aeneid and implying a discrimination of the vocabularly and syntax of prose and verse. Students will write three compositions weekly. Three hours. Second semester.
Prerequisite: Latin 1. Three units.

3. The Latin Historians. Copious reading in Sallust, Curtius, Pliny and Livy, with critical consideration of the historical works

of these writers, and collateral reading directed to reach an appreciation of their place in Latin literature. Latin composition based on the Latin historians. Three hours. First semester

Prerequisite: Latin 2. Three units.

4. The Lyric and Elegiac Poets. The Odes of Horace, books I-IV, with selections from the "Ars Poetica," and the elegies of Ovid and Propertius, will be read and carefully studied. Such phases of Roman life as are suggested will be the subject of collateral reading under the direction of the professor. Latin composition. Students will be expected to show facility and elegance of diction in their written work. Three hours. Second semester.

Prerequisite: Latin 3. Three units.

7. Special Latin. A rapid review of elementary Latin, including grammar, composition and rapid reading of easy passages. Intended for students with an amount of High School Latin insufficient to enter Latin 1. Three hours. Both semesters.

Prerequisite: High School Latin, 2 years. Six units.

101. The Drama. A critical study of the Latin dramatists: Seneca, Plautus, Terence. Three hours. One semester. Three units.

102. Historical Survey of Latin Literature. Special emphasis on its influence upon Modern Literature. Three hours. One semester. Three units.

103. Tacitus. A study of the qualities of the style of Tacitus with some consideration of his characteristics as an historian. Two hours. One semester. Two units.

104. Virgil. The earlier works, particularly the Eclogues and Georgics. Consideration of the character of Virgil through his ideas and aims. Two hours. One semester. Two units.

105. Christian Poetry. From its beginnings to the fourteenth century. Two hours. One semester. Two units.

106. Medieval Latin. A study of the variations from the Latin of the Augustan and Silver Ages as shown in the Fathers of the Church. Two hours. One semester. Two units.

LAW

Courses 1-4 are limited to students registered in the College of Business Administration.

1. Contracts. Elements of a contract; parties; consideration; illegal and void contracts; construction; verbal and written contracts; Statute of Frauds; termination; breach; damages. Two hours. First semester. Two units.

2. Negotiable Instruments, Sales. Bills, notes, drafts and checks; acceptance of drafts; certified checks; rights and liabilities of endorsers; presentment; notice of dishonor; protest. **Sales:** the contract of sale; immediate and future sales; rights and duties of consignee, consignor and carrier; stoppage and loss in transit; setting aside sales; warranties. Two hours. Second semester. Two units.

3. Agency, Bailments and Carriers. Who may be agents and how appointed; rights and duties of agents and principals in reference to each other and to third parties; termination. **Bailments:** nature and classification; innkeepers. Common carriers, carriers and passengers; of goods, telegraph and telephone companies. Three hours. First semester. Three units.

4. Partnerships and Corporations, Bankruptcy. Articles of copartnership; rights of partners against each other; rights of creditors against firm and partners; kind of partners; termination, liquidation of assets. Corporations: charter and by-laws; stockholders' and directors' meetings; forms of corporate stock; elections; ultra vires acts; directors' and stockholders' liabilities; rights of creditors; dissolution. **Bankruptcy:** Who may become bankrupts; exemptions; duties; compositions; discharge; offenses against bankruptcy law; trustees and referees; preferred creditors. Three hours. Second semester. Three units.

91. Business Law. A brief course in Contracts, Sales, Negotiable Instruments, Real Estate, Partnership, Corporations and such other subjects as may be selected. This course is designed for students in the College of Engineering. Allen: Business Law for Engineers. One hour lecture. Second semester. One unit.

Professional Courses

First Year

104. Legal Research. Law Books and Their Use. One hour. First semester. One unit.

105-6. Contracts. Huffcut and Woodruff: Cases in Contracts. Three hours. Both semesters. Six units.

107-8. Criminal Law and Procedure. Sayre: Cases in Criminal Law, supplemented by Fricke: Outline of California Procedure. Two hours. Both semesters. Four units.

109. Personal Property. Warren's Cases. Two hours. Second semester. Two units.

110. Torts. Keigwin: Cases in Torts. Two hours. Both semesters. Four units.

111. Agency. Huffcut's Cases. Two hours. First semester. Two units.

205. Common Law Pleading. Sunderland's Cases. Two hours. Second semester. Two units.

208. Damages. Bauer's Cases. Two hours. First semester. Two units.

213. Legal Ethics. Jessup: Professional Ideals of the Lawyer. One hour. Both semesters. Two units.

Second Year

203-4. California Practice and Code Pleading. Professor's syllabus and Sunderland's Cases. Two hours. Both semesters. Four units.

210. Equity. Throckmorton's Cases. Two hours. Both semesters. Four units.

211. Evidence. Wigmore's Cases. Two hours. Both semesters. Four Units.

215. Negotiable Instruments. Britton's Cases. Three hours. First Semester. Three units.

217. Private Corporations. Canfield & Wormsers' Cases. Two hours. Both semesters. Four units

218. Real Property. Finch's Cases. Three hours. Both semesters. Six units.

219. Sales. Burdick's Cases. Two hours. Second semester. Two units.

Third Year

202. Bailments and Carriers. Goddard's Cases. Two hours. First semester. Two units.

206. Conflict of Laws. Humble's Cases. Two hours. Both semesters. Four Units.

207. Constitutional Law. Long's Cases. Two hours. Both semesters. Four units.

214. Municipal Corporations. Two hours. First semester. Two units.

216. Partnership. Gilmore's Cases. Two hours. First semester. Two units.

220. Trusts. Costigan's Cases. Three hours. Second semester. Three units.

222. Wills & Probate. Costigan's Cases. Two hours. Second semester. Two units.

224. Suretyship. Two hours. First semester. Two units.

225. Community Property and Domestic Relations. Professor's syllabus and Madden's Cases. Three hours. Second semester. Three units.

All students taking Law are required to attend without credit all sessions of the Practice Court of the College of Law and all special lectures given during the scholastic year.

MATHEMATICS

1. College Algebra. After a brief review of the foundations, the following topics are treated: Variables and functions, linear and quadratic equations, determinants, logarithms, undetermined coefficients, complex numbers, binomial theorem, theory of equations and series. Three hours. One semester.

Prerequisite: High School Algebra. Three units.

2. Trigonometry. The six elementary functions for acute angles; goniometry; solution of the right and oblique triangles; graphs of the functions and solution of simple trigonometric equations. Three hours. One semester. Three units.

5. Mathematics of Finance. A course covering the mathematical principles upon which interest, discount, annuities, bond issues, depreciation, life insurance, and mine valuations are based. Prescribed for all students registered in the College of Business Administration. Kent: Mathematical Principles of Finance, with tables. Four hours. Second semester.

Prerequisite: Math. 1. Four units.

13. Analytic Geometry. Loci and their equations. The straight line; the circle; the parabola; the ellipse; the hyperbola; transformation of coordinates; polar coordinates. Three hours. One semester. Three units.

14. Differential Calculus. Fundamental notions of variables; functions, limits, derivatives and differentials; differentiation of the ordinary algebraic, exponential and trigonometric functions with geometric applications to maxima and minima, inflexions and envelopes; Taylor's formula. Three hours. One semester. Three units.

15. Integral Calculus. The nature of integration; elementary processes and integrals; geometric applications to area, length, volume and surface; multiple integrals; use of infinite series of integration; introduction to differential equations. Three hours. One semester. Three units.

17. a) Algebra. Complete algebra to include quadratic equations; then more particularly: Ratio and proportion, progressions, imaginary and complex numbers, indeterminate equations, binomial theorem, variables and limits, inequalities, interpretation of results, logarithms, permutations and combinations, undetermined coefficients, determinants and graphic algebra. Rietz & Crathorne: Introductory College Algebra.

b) Trigonometry. Development of general formulae. Functions and their relations. Logarithms and their uses. Properties of triangles. Application of principles to practical problems in right and oblique triangles. Navigation in plane trigonometrical problems. Spherical trigonometry. Application to problems in astronomy and spherical mensuration. Palmer and Leigh: Plane and Spherical Trigonometry. Five hours. First semester. Five units.

18. a) Continuation of Math. 17b.

b) Analytic Geometry. Loci. Lines. Circle. Different systems of coordinates. Conic sections. Supplementary proportions. Loci of the second order. Plane curves of higher order. Solid ana-

lytical geometry, especially of revolution. General Equations. Wilson & Tracey: Analytic Geometry. Five hours. Second semester.
Prerequisite: Math. 17. Five units.

19. Calculus. Fundamental formulae and principles for differential and integral calculus. Maxima and minima. Curvature. Surfaces. Volumes. Intermediate forms. Envelopes. Series Expansion. Forms of integration. Practical application. Granville, Smith & Longley: Differential and Integral Calculus. Five hours. First semester.
Prerequisite: Math. 18. Five units.

20. Calculus. Continuation of Math. 19. Five hours. Second semester. Five units.

116. Differential Equations. Analysis and deduction of formulae and equations used in physics, mechanics and engineering problems. Applications of formulae and equations given in engineering handbooks to problems. Practical problems and lectures. Campbell: Differential Equations. Two hours. First semester.
Prerequisite: Math. 20. Two units.

117. Methods of Least Squares. Study of the principles and methods. Applications to solution of physical, astronomical, engineering and other problems. The student will be made familiar with the higher and more accurate method of solution of problems in his profession, especially triangulations. Two hours. Second semester.
Prerequisite: Math. 20. Two units.

MECHANICAL ENGINEERING

4. Machine Drawing. Language of Mechanical Drawing. Conventional method of representing bolts, screws and other standards. Piping. Designing and detailing simple parts to take tension, compression and shear. Study of different methods of drawing and dimensioning found on commercial working drawings. Accuracy, completeness and speed are required. French: Engineering Drawing. Six hours lecture and drawing. Second semester. Two units.

10. Shopwork—Woodworking. Use and care of tools. Layout of work from blueprints. Shop clerical work and time study. Forging. Hardening and tempering. Characteristics of different grades of iron and steel. Patternmaking. Theory of patternmaking and moulding. Characteristics of commercial patterns. Shop visits. Six hours laboratory. First semester. Two units.

11. Shopwork—Foundry. Floor and bench moulding. Castings of brass, bronze and alloys. Core making. Composition of castings. Machine shop practice. Operation and care of metal working machinery. Time study and cost analysis. Shop visits. Six hours laboratory. Second semester. Two units.

15. Mechanical Engineering Laboratory. Method of Investigation. Accuracy of numerical calculations. Measurement of pressure. Measurement of temperature. Determination of moisture in steam. Planimeters. Dynamometers. Testing of lubricants. Moyer: Power Plant Testing. Six hours laboratory. First semester. Two units.

105. Machine Design. Selection of materials for machine parts. Proper working stresses for different materials under dead, repeated and reversed loads. Determination of nature and distribution of stresses in each element of a machine. Design and details of a simple machine. Hyland & Kommers: Machine Design. Six hours laboratory. First semester. Two units.

106. Machine Design. Friction. Figuring weight and cost of manufacture. Kinematic layout of a machine for functional operation. Design and layout and detailing of a hand press. Hyland and Kommers: Machine Design. Six hours laboratory. Second semester. Two units.

107. Machine Design. The evolution of a design from preliminary sketch to complete working drawing. Study of symmetry, ease of operation and repair, depreciation and cost of manufacture. Design and working drawings of a power driven punch press Albert: Machine Design Problems. Six hours laboratory. First semester. Two units

107a. Machine Design. Continuation of M. E. 107. In this course the design begun in M. E. 107 is completed. Six hours laboratory. Second semester. Two units.

108. Power Plant Design. Sites. Comparison of high speed engines. Corliss engines, steam turbines and gas engines. Cost and adaptability of different types of steam boilers. Condensers. Economizers. Superheaters. Pumps. Stokers. Piping. Complete layout of a plant with specifications and advertisements for bids. Morse: Power Plant Engineering and Design. Six hours drawing. First semester. Two units.

114. Shopwork (a) Machine shop practice. (b) Shop management. In this course the student is given certain tasks and shopwork assignments to carry out and oversee. The system involves managing, planning, routing, stock and tool room methods, production and time records, and actual supervising and handling of lower classmen. Shop visits. Lectures. Three hours laboratory. First semester. One unit.

114a. Shopwork. Continuation of M. E. 114. Three hours laboratory. Second semester. One unit.

116. Mechanical Engineering Laboratory. Engine indicators and reducing motions. Flow of fluids. Calorific value of fuels, solid, liquid and gaseous. Flue gas analysis. Calibration of instruments. A. S. M. E. codes for testing power plant equipment. Moyer: Power Plant Testing. Three hours laboratory. Second semester. One unit.

117. Mechanical Engineering Laboratory. Internal combustion engine tests, both Diesel and Otto Cycle engine tests. Boiler, steam engine and refrigeration machinery tests. Moyer: Power Plant Testing. Six hours laboratory. First semester. Two units.

117a. Mechanical Engineering Laboratory. Turbogenerator and and condenser tests. Tests of complete power plants. Analysis of cost of power in commercial plants. Moyer: Power Plant Testing. Six hours laboratory. Second semester. Two units.

118. Heat Power. Sources of Power. The internal combustion engine. Principles of combustion. Work and power. Heat and work. The Otto Cycle. The Diesel Cycle. Actual performance of internal combustion engines. The steam-power plant. Steam. Steam-engine performance. Two hours lecture. First semester.
Prerequisite: Physics 14 and 15. Two units.

119. Heat Power. Steam-engine mechanisms. The steam turbine. Condensing equipment. Steam boilers. Boiler fuels and furnaces. Boiler accessories and auxiliaries. Boiler performance. Butterfield, Jennings and Luce: Steam and Gas Engineering. Three hours lecture. Second semester.
Prerequisite: M. E. 118. Three units.

120. Thermodynamics. Properties of Steam. Law of conservation of energy. Simple thermodynamic processes of steam. Available energy for unheated engines. Ideal steam cycles. Perfect gases. Compressed air. Perfect gas cycles. Available energy and thermal efficiency. Refrigeration and evaporation. The second law of thermodynamics. Flow through nozzles, venturi tubes and orifices. Emswiler: Elements of Thermodynamics. Three hours lecture. First semester.
Prerequisite: M. E. 119. Three units.

121. Internal Combustion Engines and Automobiles. The theory and design of gas, gasoline and oil engines, gas producer practice; the combustion of gaseous fuels. Streeter: Internal Combustion Engines. Two hours lecture. First semester.
Prerequisite: M. E. 120. Two units.

122. Hydraulic Motors. Action of water on curved vanes. Forces developed and effect of impact. Work done. Centrifugal action. Reaction turbines. Vane form and arrangement. Axial, radial and mixed flow wheels. Losses due to friction, shock, leakage and residual velocity. Impulse turbines. Experiments with turbines of various types. Governors. Centrifugal pumps. Theory. Radial and curved vanes. Velocity of flow. Volute. Diffuser. Guide vanes in diffuser. Impeller passages. Balancing. Losses. Efficiency. Selection and arrangement of water-wheels. Governors and auxiliary apparatus. Relation between available water supply, possible output and perfection of development work. Draft tubes. Stop valves. Gates. Vacuum and pressure relief standpipes. Analysis of typical installations. Water power costs. Daugherty: Hydraulic Turbines. Two hours lecture. Second semester.
Prerequisite: G. E. 121. Two units.

125. Heating and Ventilation. Theory and design of the various systems for heating and ventilating buildings, including hot air, hot water, steam and the plenum and vacuum systems and central station heating. Hoffman: Handbook for Heating and Ventilating Engineers. Two hours lecture. First semester. Two units.

126. Heating and Ventilation. Continuation of M. E. 125. Two hours lecture. Second semester. Two units.

170. Thesis. Original investigation of some Engineering problem. Two units.

PHILOSOPHY

Students who wish to make Philosophy their major subject, besides completing the other required courses of the lower division, must pass the courses in Philosophy 5-6 with at least a grade of C.

The major program must include 24 units of upper division courses in Philosophy. An average grade of C or higher must be maintained in all courses of the major and, at the end of the senior year, each student must pass a comprehensive final examination.

1. Logic: Dialectics. This course is concerned mainly with the nature and acts of the mind, ideas, judgments, the syllogism, the laws of correct reasoning; induction and deduction, argumentation and proof. Two hours. First semester. Two units.

2. Logic: Critics. Truth and error, the nature, possibility, degrees, motives and criteria of certitude. Two hours. Second semester.
Prerequisite: Philosophy 1. Two units.

3. General Metaphysics. Ontology. A methodical investigation of the fundamental aspects of Being, its primary divisions and transcendental attributes. Potency and Act. Substance and Accident. Three hours. First semester.
Prerequisite: Philosophy 2. Three units.

4. Metaphysics. (a) The Cause. The notion of Cause and its divisions. (b) The universe and matter. General properties of matter. The origin of the material universe; the construction of inorganic bodies. Life. Spiritual and organic life. Mechanical theory of life. The evolutionist and matter. Three hours. Second semester.
Prerequisite: Philosophy 3. Three units.

5-6. History of Philosophy. A comprehensive survey of ancient, patristic, medieval and modern philosophy. Three hours. Both semesters. Six units.

7. Introduction to Philosophy. Divisions of Philosophy. The nature and discussion of the particular problems studied in each division of Philosophy. Three hours. First semester. Three units.

8. Logic. Nature and acts of the mind. The syllogism. Laws of correct reasoning. Argumentation and proof. Truth and error. Nature, degrees and criteria of certitude. Three hours. Second semester. Three units.

15. Ontology, Cosmology. Being, its origin, development and explanation. Potency and Act. Substance and Accident. Causes and their divisions. The universe and matter. Origin of the material universe. Constitution of inorganic bodies. Three hours. First semester. Three units.

16. Psychology, Theodicy. Life. Spiritual and organic life. Mechanical theory of life. The evolutionist and matter. God, His existence, nature and attributes. Creation. Providence. Miracles. Three hours. Second semester. Three units.

101. Psychology. Beginning with an explanation of the cerebro-spinal nervous system, this course leads on to the study of the phenomena of sensuous life; sense perception, imagination and mem-

ory, sensuous appetite, movement and feeling. Rational life; the origin and development of rational concepts, rational appetency, free will and determination. The origin, nature and destiny of the human soul, the union of the soul and body. The modern psychologists on the nature and existence of the human soul examined and refuted. Three hours. August to February.
Prerequisite: Junior standing. Three units.

102. Theodicy. Proofs of the existence of God; His essence; examination of pantheistic systems; the divine immutability, immensity, eternity; the divine intellect and will; moral attributes of God; His omnipotence; divine providence. Three hours. February to May.
Prerequisite: Philosophy 101. Three units.

103. Fundamental Ethics. Treats the subjects belonging to general theory, the nature of the moral act, the distinction between moral good and moral evil, moral habits, natural and positive moral law; conscience, rights and duties. Three hours. First semester.
Prerequisite: Senior standing. Three units.

104. Applied Ethics. The application of the general principles of ethics to particular and social rights and obligations; the rights to property, life, honor; the rights and obligations of domestic society, marriage and divorce. Civil society; its nature and forms; the rights of civil authority. Church and state; the ethics of international relations, peace and war. Three hours. Second semester.
Prerequisite: Philosophy 103. Three units.

105. Philosophy of the Greeks. A study of the development of Greek thought from the Pre-Socratic era, through Plato and Aristotle, to the Greco-Oriental period. Lectures, essays and required readings. Three hours. One semester. Three units.

106. Scholastic Philosophy. The history of philosophy from the Patristic age to the age of Humanism, laying particular stress on the formation and development of scholastic philosophy from the seventh to the end of the thirteenth century. Its decline during the transition to more recent philosophies, 1300-1620. Its revival in the nineteenth century. Lectures, essays and required readings. Three hours. One semester. Three units.

107. Recent Philosophy. Descartes to Kant, 1620-1780. A study of the Intellectualist movement from Descartes to Leibnitz and of English and French Empiricism. Lectures, essays and required readings. Three hours. One semester. Three units.

108. Recent Philosophy. Kant and his successors. The Transcendental Idealism of Kant and the Monistic Idealism of his successors. Later varieties of the Empiricist theory. Pragmatism. Neorealism. Spiritualism. Lectures, essays and required readings. Three hours. One semester Three units.

111. Logic. The reasoning faculties and processes. Law of thought. Truth. Certitude. Doubt. False Systems. Three hours. First semester. Three units.

112. Ontology, Psychology. Being, its origin, development, explanation. Life, its origin and kinds. Origin of Species. Darwinism. Huxley. Haeckel. The soul, its origin and spirituality. Three hours. Second semester. Three units.

113. Theodicy. God, His existence, nature and attributes. Creation. Providence. Miracles. Three hours. First semester. Three units.

114. Ethics. Right and Wrong. Natural Law. Sanction of Law. False forms of morality. Worship. Homicide. Suicide. Dueling. Society. Marriage. Divorce. Socialism. Theories of government. Suffrage. Liberty of the press. Church and State. Three hours. Second semester. Three units.

PHYSICS

1. Mechanics, Molecular Physics, Sound. General principles of matter. General properties of bodies. Equilibrium. Gravity. Pendulum. Properties peculiar to solids. Capillarity. Hydro-dynamics. The properties of gases. Aerodynamics. Production, propagation and reflection of sound. The physical theory of music. Carhart: College Physics. Three hours lecture. First semester. Three units.

2. Physical Laboratory. To accompany Physics 1. Three hours laboratory. First semester. One unit.

3. Light, Heat, Electricity. Transmission, velocity and reflection of light. Mirrors. Lenses. Dispersion and achromatism. Optical instruments. The eye. Double refraction. Interference and polarization. Properties of magnetism. Laws of magnetic action. Terrestrial magnetism. Quantitative laws of electric action. Distribution. Electro-static induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvanometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electro-dynamics. Electro-magnets. Magnetization of iron. Telegraphy. Electro-magnetic induction. Passage of electricity through gases. Magneto and dynamo-electric machines. Dia-magnetism. Connection between electricity and light. Carhart: College Physics. Three hours lecture. Second semester.

Prerequisite: Physics 1, 2. Three units.

4. Physical Laboratory. To accompany Physics 3. Three hours laboratory. Second semester.

Prerequisite: Physics 1, 2. One unit.

11. Mechanics, Molecular Physics, Sound. General principles of matter. General properties of bodies. Equilibrium. Gravity. Pendulum. Properties peculiar to solids. Capillarity. Hydro-dynamics. The properties of gases. Aerodynamics. Carhart: College Physics. Two hours lecture. Second semester. Two units.

12. Wave Motion, Sound, Light. Production, propagation and reflection of sound. The physical theory of music. Transmission, velocity and reflection of light. Mirrors. Lenses. Dispersion and achromatism. Optical instruments. The eye. Double refraction. Interference and polarization. Carhart: College Physics. Two hours lecture. First semester. Two units.

13. Physical Laboratory. To accompany Physics 12. Six hours laboratory. First semester. Two units.

14. Heat, Magnetism, Electricity. Properties of magnetism. Laws of magnetic action. Terrestrial magnetism. Quantitative laws of electric action. Distribution. Electrostatic induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvanometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electrodynamics. Electro-magnets. Magnetism of iron. Telegraphy. Electromagnetic induction. Passages of electricity through gases. Magneto and dynamo-electric machines. Diamagnetism. Connection between electricity and light. Carhart: College Physics. Two hours lecture. Second semester.

Prerequisite: Physics 12, 13. Two units.

15. Physical Laboratory. To accompany Physics 14. Six hours laboratory. Second semester.

Prerequisite: Physics 12, 13. Two units.

104. Electrical Measurements. A laboratory course in Electrical Measurements intended primarily for students of Electrical Engineering. Three hours laboratory. One semester.

Prerequisite: Physics 14, 15. One unit.

121. Astronomical Physics. A laboratory course in the study of astronomical, meteorological and seismological phenomena in connection with the Observatory. Hours and credits to be arranged.

Prerequisite: One year of Physics and two years of Mathematics.

POLITICAL SCIENCE

Students who wish to make Political Science their major subject, besides completing the other required courses of the lower division, must pass the courses in History 1-2 and Political Science 1-2 with at least a grade of C.

The major program must include 24 units of upper division courses in Political Science. An average grade of C must be maintained in all courses of the major and, at the end of the senior year, each student must pass a comprehensive final examination.

1-2. Introduction to Political Science. Fundamental definitions and distinctions: state, government, nation, sovereignty, individual liberty. Nature, origin and forms of government. Separation of powers. Functions of government. Individualism, socialism and social reform. Three hours. Both semesters. Six units.

101. American National Government. Origin and development of the Constitution. Powers, functions and interrelation of executive, administrative, legislative and judicial branches of the government. Expansion of governmental activities. The national party system. Three hours. First semester. Three units.

102. National Administration in the United States. History, organization, personnel, business methods and accomplishments of the various departments of the administrative branch of the United States Government. Three hours. Second semester. Three units.

103. Theory of the State. A study of political theory dealing with the problems of the nature of the state, the purpose of government, liberty and authority, the nature of law and justice as treated

by various political philosophers. Three hours. One semester. Three units.

104. American Political Theory. Underlying theories and principles of American governmental policy. Three hours. One semester. Three units.

105. American State and County Government. Constitutional development and governmental organization of the American states and counties, with special reference to California. Three hours. One semester. Three units.

106. Municipal Government. The nature, government and problems of cities, particularly in the United States. Three hours. One semester. Three units.

107. Introduction to International Law. The nature and scope of international law. Rights and duties of states. Jurisdiction. Nationality. Relations of states in peace and war. International law and the League of Nations. Three hours. One semester. Three units.

108. International Relations. The nature and importance of international relations. Underlying problems. Nationalism, militarism, imperialism. Agencies of control: diplomatic, administrative. Development of international organization culminating with the League of Nations. Three hours. One semester. Three units.

109. Political Parties in the United States. The political party as part of the political machinery. Party organization. Campaign methods. Public opinion and party leadership. The true functions of parties. Party responsibility. Three hours. One semester. Three units.

110. (Law 207). Constitutional Law of the United States. Fundamental principles and important cases. Two hours. Both semesters. Four units.

PUBLIC SPEAKING

1. Fundamentals of Expression. The fundamental principles of expression; the speaking voice; body and expressive movement. Training the voice and body to be the willing and obedient servant of the mind. Each student appears in memorized work in class. Two hours. First semester. One unit.

2. Fundamentals of Expression. A continuation of course 1, with development of impersonation and interpretation. Two hours. Second semester. One unit.

3. Philosophy of Expression. An advanced study of the principles of expression; advanced training of the voice; embodiment of principles in practice work. A short selected cutting of standard literature is presented by each student at each class. Special training in the interpretation of longer selections for public presentation. Two hours. First semester. One unit.

4. Philosophy of Expression. A continuation of course 3, with special emphasis upon impersonation, and standard speeches. Two hours. Second semester. One unit.

11. Fundamentals of Expression. A short course in expression intended primarily for students in the College of Engineering. Fundamentals of expression; the speaking voice; expressive movement; impersonation; interpretation. Each student must appear in memorized work at each class. One hour. First semester. One unit.

12. Fundamentals of Expression. A continuation of course 11. One hour. Second semester. One unit.

101. Aesthetics. An advanced course where every principle taught in previous courses is put to practical test. Each student is required to memorize and present during the course a short play, in which he impersonates all of the different characters and interprets both the particular parts and the play as a whole. One hour. First semester. One unit.

102. Aesthetics. A continuation of course 101. One hour. Second semester. One unit.

107. Dramatic Seminar. The mechanics of the theater and the staging of a play, both theory and practice. Lines: voice, body, impersonation. Business: pantomime and stage. Plots: ground, light, scenery, property. Mechanics: illusions and terminology. Criticism: play-reviewing and dramatic criticism. Hours and credits to be arranged.

109. Debating Seminar. The application of the principles of expression to the Debate. A study of the particular form of debating. Presentation and arrangement of ideas. Practical application of methods in connection with a major collegiate debate. Hours and credits to be arranged.

RELIGION

1. Essentials of Christian Doctrine. Various creeds. The Apostles' Creed. Each article of the Creed is studied in particular, attention being given to any subject bearing directly on these articles, as Sin, the Powers of the Church, Infallibility, etc. Two hours. First semester. One unit.

2. Essentials of Christian Doctrine. The Law of God. What is commanded or forbidden by the Decalogue is studied in detail. The Precepts of the Church, Grace, Prayer, and each of the Seven Sacraments together with collateral subjects. Two hours. Second semester. One unit.

3. Christianity, A Revealed Religion. What Religion is. What Revelation is. Kinds of revelations. What revelations are necessary to know truths above human knowledge. Man's attitude toward Revelation. Primitive, Patriarchal, Mosaic Revelation. The Divine origin of Pre-Christian Revelation. The Christian Revelation: its origin, evidences of the divinity of its origin. Two hours. First semester. One unit.

4. The Church: The Dispenser of the Christian Religion. Institution of the Church. End of the Church. Constitution of the Church. Marks of the Church. The teaching office of the Church. Sources of the Church's teaching. The Rule of Faith. Two hours. Second semester. One unit.

101. Christian Dogma. God, the Author and Restorer of our salvation. The existence, nature and attributes of God. The Divine

Trinity. God, the Creator of the universe. Various grades of creation. The spiritual and material world. Man. Relation of different orders of creation to one another. God the Redeemer of fallen man. Decree and plan of redemption. The Redeemer—one person and two natures. The work of redemption. Two hours. First semester. One unit.

102. The Plan of Redemption as Realized in Individuals. Grace, actual, habitual or sanctifying. The Sacraments as a means of Grace. The Sacraments are studied in general—their matter and form; their efficacy and the dispositions requisite to receive them validly and with fruit. Then each Sacrament is studied in detail. The Church as a means of salvation. The four last things. Two hours. Second semester. One unit.

103. Christian Morals in General. Law as the objective norm of human actions. Conscience as the subjective norm of human actions. The conditions of morality. Moral good and moral evil. Two hours. First semester. One unit.

104. Christian Morals in Particular. The Christian's duties toward God—Faith, Hope, Charity. Religion. Direct and indirect acts of worship. The Church as the controller of religious worship. Duties towards ourselves and our neighbor—general and particular. Works of Supererogation or Christian Perfection. Two hours. Second semester. One unit.

105-106. The New Testament, especially the Four Gospels. A word for word explanation of the text. Apparent discrepancies explained and harmonized. Two hours. Both semesters. Two units.

SPANISH

1. Elementary Spanish. Elements of Spanish grammar. Drill in pronunciation. Vocabulary. Three hours. First semester. Three units.

2. Elementary Spanish. A continuation of Spanish 1. Syntax, oral and written exercises. Reading from the simpler Spanish prose. Three hours. Second semester.
Prerequisite: Spanish 1. Three units.

3. Intermediate Spanish. Review of grammar and syntax. Oral and written exercises. Reading of somewhat difficult Spanish prose. Three hours. First semester.
Prerequisite: Spanish 2. Three units.

4. Intermediate Spanish. Reading, written and oral exercises. This course aims at preparing the student to read the more difficult Spanish writers. Three hours. Second semester.
Prerequisite: Spanish 3. Three units.

5, 6. Advanced Composition and Reading. Composition; sight reading; oral and written reports in Spanish; historical survey of Spanish literature. Conducted almost entirely in Spanish. Three hours. Both semesters. Six units.

THE OBSERVATORY

ASTRONOMICAL, METEOROLOGICAL AND SEISMOLOGICAL OBSERVATORY

Albert Joseph Newlin, B. S., J. D.
Director of the Observatory

Paul J. Torelli, B. S., LL. B.
Alphonse L. Buonaccorsi
Assistants

The Astronomical and Meteorological Observatories were under the immediate direction of the late Father Ricard, known throughout the country as the "Padre of the Rains." In recognition of the work of Father Ricard, the Knights of Columbus of California built the Knights of Columbus Ricard Memorial Observatory, which provides the facilities and equipment for a much more comprehensive investigation of astronomical and meteorological problems, and a correspondingly greater service to the country.

Through its Seismological Station the University is a member of a chain of seismological stations maintained by the Jesuits throughout the world, and has been a pioneer on the Pacific Coast in the recording and observation of seismological disturbances, as well as in the study of their causes.

The University Seismological Station operates two Wiechert seismographs, consisting of one vertical and two horizontal components. Recently, however, a new impetus has been given this branch of geophysical investigation by the construction of a vault embodying all that was found best and latest in stations of this type. The Seismological Station is now in possession of three new Galitzin Seismometers of the long-period type, and two horizontal components of the Wood-Anderson Seismometers which were constructed at Pasadena for this Station, all of which are located in the new vault. The Wood-Anderson Seismometers have been designed for a special study of local earthquakes and are the short-period type. Finally, the University hopes to complete this station by the installation of a "Shortt Synchronome Clock," thus assuring accurate time for all our records.

Of special prominence, however, is the work which has been done in long range weather forecasting through a study of sun spots. This line of study was instituted by the late Father Ricard over a generation ago and in the meantime he has built up a large mass of data in this regard, so that the records and observations at the University are perhaps the most complete of any in the country. Monthly forecasts are sent out regularly from the Observatory. With the aid of such new instruments as the 18.5-inch reflector and the spectroheliograph, the Director of the Observatory will be enabled to pursue his researches with greater facility and success.

DEGREES CONFERRED

May 13, 1933

Honorary Degree

DOCTOR OF LAWS

Oliver D. Hamlin

Degrees in Course

DOCTOR OF PHILOSOPHY

John Moore Martin, M. M.; S. T. B. (Catholic University of America) '27; A. B. (St. Mary's University, Baltimore) '29, A. M. '31.

JURIS DOCTOR

Fenton John McKenna, Ph. B. '28, LL.B. '30

MASTER OF ARTS

Gregory Thomas Martin, A. B. '32

BACHELOR OF LAWS

Forrest Llewellyn Bentzien, A. B. (Stanford) '30
David Carroll Kirby, Ph. B. '31
Thomas Patrick O'Donnell, Ph. B. '31
James Thomas O'Keefe, Jr., Ph. B. '31
Ronald Francis Peters, Ph. B. '31
Alfred Ronstadt, A. B. '31
James Joseph Scoppettone, Ph. B. '31

BACHELOR OF ARTS

Donald Gregory Cotter
Vincent Cullinan**
James William Foley***
Paul Thomas Gallagher*
John Joseph McGuire
Joseph Philip Morey
William Albert Nelson
James Joseph Nicholas
Thomas Warden Norton
Alfred Joseph Valente
Charles Francis Wilcox*

*Cum laude.
**Magna cum laude.
***Maxima cum laude.

BACHELOR OF PHILOSOPHY

Louis Vincent Bastanchury
John Adams Boyd
Laurence Willim Carr
Lewis Lucian Chimento
Harold Joseph DeLuca
Bernard Gilmore Dowd
Richard Eugene Doyle, Jr.*
John Bradsbury Harman*
William Henry Harrington
William Leo Mattenberger
Charles Paul Molinari*
Carl John Pacheco
William Valentine Regan, Jr.
George James Stepovich
James Talton Turner

BACHELOR OF SCIENCE

Joseph Aloysius Branson
John James Carey
Edward Joseph Clark
Emile James Corboline
Julian Francis Flaherty
George Louis Long
Leo David Mahan
Charles Francis McNamee
William Elden Niles
Francis Fulton O'Reilly
Jacques Edward Perier*
Charles Kenneth Roach
Thomas Joseph Tuite

BACHELOR OF CIVIL ENGINEERING

Edwin Porfirio Góngora
Harold Leo May
Efraim Emilio Pereira
Weber Daniel Rothwell

BACHELOR OF ELECTRICAL ENGINEERNG

Paul Victor Birmingham
Joseph William Carniglia
Daniel Edward Collins, Jr.
Edwin Clausen Drew
Lester Ambrose O'Meara
Elmo William Pardini
Joseph Henry Russell*
Emil Julius Scheiber*
Ralph John Sheridan
John Anthony Sparolini, Jr.*
William James Wilson, Jr.

BACHELOR OF MECHANICAL ENGINEERING

William Henry Hermes, Jr.
George Gale Sullivan*

BACHELOR OF COMMERCIAL SCIENCE

Robert Emile Ashley
Seth Gibbs Beach
James Harry Coyne
Raymond Eugene Feess
John Valentine Lydick
Joseph Robert Nolan
Charles Maurice O'Brien, Jr.
George M. G. Rooney
Jacob Edward Von Tobel

September 1, 1933

BACHELOR OF COMMERCIAL SCIENCE

Henry John Caletti
Brooke L. Hart

*Cum laude

EXTRAORDINARY PRIZES

1933

The Nobili Medal, for the student who shall be deemed first in morals, obedience and application to study, is awarded to Vincent Cullinan.

The Silver Medal for Conduct and Application, for the student **in residence** at the University distinguished for application and conduct, is awarded to John Anthony Sparolini Jr.

Distinguished: Laurence W. Carr, Agustin A. de la Guardia, Richard E. Doyle Jr., Raymond E. Feess, Paul T. Gallagher, Edwin P. Gongora, James F. Green, John B. Harman, R. Manning Hermes, Anton P. Judnich, Leonard H. Ladd, Cyril R. Lentz, Harold L. May, Charles P. Molinari, James J. Nicholas, Thomas W. Norton, Eduardo Ospina, William V. Regan Jr., Robert H. Richards, Joseph H. Russell, Emil J. Scheiber.

The Silver Medal for Conduct and Application, for the student **not resident** at the University distinguished for application and conduct, is awarded to Charles Francis Wilcox.

Distinguished: Hiram D. Blanchard, James W. Foley, Virgil J. Gianelli, Louis J. Pasquinelli, Richard J. Schmidt, Milos G. Spaich, George J. Stepovich, G. Gale Sullivan, Richard G. Thrift, Alfred T. Twigg.

The Archbishop's Medal for Christian Doctrine, valued at $50, for the student who shall have submitted the best paper on a given religious topic, is awarded to James William Foley.

The Ryland Prizes for Debating, for excellence in the annual Ryland Debate between the Senate and the House, are awarded as follows: First Prize, $20, to Vincent Cullinan; Second Prize, $15, to George J. Stepovich; Third Prize, $10, to Richard E. Doyle Jr.

The McCann Prize of $15 for the best short story is awarded to Jacques E. Perier.

The Redwood Prize of $25 for the best essay on an historical subject is awarded to Fred W. Burton.

The Owl Prize of $25 for the winner of the annual Oratorical Contest is awarded to John B. Harman.

The Dramatic Art Prize, a watch, the gift of Mr. William H. Leahy, for the winner of the Dramatic Art Contest, is awarded to Richard G. Thrift.

The Orella Medal, valued at $25, for the writer of the best paper on a scientific subject, is awarded to Alphonse L. Bounaccorsi.

The Barchi Prizes, given by Joseph M. Durney, Esq., for the best papers in Chemistry, are awarded as follows: First Prize, $15, to Victor A. Vargas; Second Prize, $10, to Alfred T. Twigg.

The Bancroft-Whitney Company of San Francisco offers a prize for the Senior honor student in the College of Law. This prize is awarded to Thomas P. O'Donnell, Ph. B., '31.

The American Law Book Company of Brooklyn, N. Y., offers a prize for the honor student in the course in Legal Research. This prize is awarded to Lewis L. Chimento.

REGISTER OF STUDENTS 1933-1934

Abbreviations Used

A. & S.—College of Arts and Sciences.
B. A.—College of Business Administration.
C. E.—Civil Engineering.
Ch. E.—Chemical Engineering.
E. E.—Electrical Engineering.
Engr.—College of Engineering.
Fr.—Freshman.
Gr.—Graduate.
Jun.—Junior.
M. E.—Mechanical Engineering.
Sen.—Senior.
Soph.—Sophomore.

Adams, William John, Jr.	Fr. Engr.	Santa Cruz
Alaga, Nicholas, Jr.	Sen. A. & S.	Watsonville
Aldridge, Wilson A.	Fr. A. & S.	San Francisco
Alaimo, John Charles	Jun. A. & S.	San José
Andriano, Leo Louis	Jun. A. & S.	Los Altos
Antonini, Charles John	Jun. A. & S.	San Francisco
Arnerich, James Anthony	Jun. A. & S.	San José
Atteridge, Arthur Charles	Soph. A. & S.	Watsonville
Avery, William Edward	Fr. A. & S.	San José
Bacigalupi, James Augustus, Jr.	Soph. A. & S.	Los Gatos
Bailly, Thomas Edward, Jr.	Sen. A. & S.	San Francisco
Banks, Bert Leroy	Soph A. & S.	Santa Ana
Bannan, Charles Francis	Fr. Engr.	San Francisco
Bannan, Louis I.	Fr. A. & S.	San Francisco
Bartlett, Harold Wilmot, Jr.	Soph. Engr.	San José
Barton, Richard Edward	Fr. A. & S.	Long Beach
Bassi, Richard Joseph	Fr. A. & S.	San Luis Obispo
Beckrich, John Peter	Sen. A. & S.	Santa Barbara
Belick, Anthony Steve	Fr. A. & S.	San José
Belle, Louis	Fr. A. & S.	Los Angeles
Belli, Bruno	Fr. A. & S.	San Francisco
Benard, Martin	Fr. Engr.	San Francisco
Benecke, Carl J.	Fr. A. & S.	Los Angeles
Berg, John Albert	Fr. A. & S.	Cupertino
Beverly, Code	Sen. A. & S.	San Francisco
Bianchi, Nello Richard	Soph. B. A.	Richmond
Biber, Paul Emerson	Jun. B. A.	San Mateo
Bickford, Kenneth Kevin	Jun. C. E.	San Francisco
Blanchard, Hiram Daniel	Sen. B. A.	Los Gatos
Bond, Peter Ph. B., Santa Clara, 1932	III Law	Sunnyvale
Bosshardt, Robert Louis	Jun. A. & S.	Parma, Idaho
Bottaro, Frank	Sen. A. & S.	Sacramento
Bottini, William Donald	Jun. C. E.	Pleasanton

Boudreau, Joseph Richard	Jun. A. & S.	Anchorage, Alaska
Bracchi, Francis Joseph	Fr. B. A.	San José
Brady, Thomas P.	Fr. A. & S.	San Francisco
Brichetto, Paul John	Fr. A. & S.	Oakdale
Britschgi, Carl Aloysius	Sen. B. A.	Menlo Park
Brown, Bryce Templeton	Fr. B. A.	Salinas
Brown, Don C.	Fr. A. & S.	Reno, Nevada
Brucia, Joseph Bernard	Fr. B. A.	San Francisco
Brunk, Charles Salem	Fr. B. A.	Los Angeles
Bryner, Sergius	Soph. A. & S.	Menlo Park
Buckley, Farrell Aloysius	Soph. Engr.	Palo Alto
Bunner, Leo Edward	Jun. A. & S.	San Francisco
Buonaccorsi, Alphonse Lawrence	Sen. M. E.	San Francisco
Burgy, Joseph Curran, Jr.	Jun. A. & S.	Hagerman, Idaho
Burkett, Irman Justin	Fr. A. & S.	San José
Burman, William G.	Soph. A. & S.	San Francisco
Burton, Fred William	Sen. A. & S.	Yreka
Bussi, John Ernest	Soph. Engr.	San José
Calcagno, Joseph Simone	Soph. A. & S.	San José
Caldwell, Willis Andrew	Soph. A. & S.	Sunnyvale
Callahan, Francis J.	Soph. A. & S.	San Francisco
Cambiano, Richard Emmet	Soph. A. & S.	San José
Carlsen, Harold Eugene	Soph. B. A.	Seattle, Washington
Carr, James Kennedy	Sen. C. E.	Redding
Carr, Paul Berchmans	Fr. A. & S.	Redding
Carroll, Joseph P.	Jun. A. & S.	San Francisco
Carroll, Patrick J.	Fr. A. & S.	San Francisco
Carroll, Thomas L.	Soph. Engr.	Las Vegas, Nevada
Casassa, Roland Edward	Fr. B. A.	San Francisco
Cassin, Robert Emmet Ph. B.,Santa Clara, 1932	III Law	San José
Cerles, Theo Alfred	Fr. B. A.	Orland
Chandler, Clyde Arthur	Fr. A. & S.	Bonners Ferry, Idaho
Chandler, Harold Maertens	Sen. A. & S.	Mountain View
Chargin, Anthony Joseph	Fr. A. & S.	San José
Charlton, Daniel J.	Soph. A. & S.	Santa Barbara
Chartz, John Alfred	Fr. Engr.	Carson City, Nevada
Chimento, Lewis Lucian Ph. B., Santa Clara, 1933	II Law	San José
Clark, Edward Andrew	Soph. B. A.	Sequim, Washington
Clark, George Edward	Fr. A. & S.	Gilroy
Clark, John Neal	Jun. A. & S.	Vallejo
Clarke, Alan Woods	I Law	Glencoe, Illinois
Clifford, Daniel P.	Jun. A. & S.	San Francisco
Colosimo, Eugene J.	Soph. A. & S.	Pasadena
Comisky, John P.	Fr. A. & S.	San Francisco
Conley, John William	Jun. M. E.	Palo Alto
Conneally, John P.	Fr. A. & S.	Los Angeles
Conradt, August William	Soph. A. & S.	Wailuku, Hawaii
Conroy, Edmund Charles	Soph. A. & S.	San Francisco
Conroy, John Mockler	Soph. A. & S.	Palo Alto
Coogan, Jack Leslie	Soph. A. & S.	Los Angeles
Corcoran, Harry T.	Fr. A. & S.	San Francisco

Cordero, Robert Paul	Fr. B. A.	Salinas
Corriea, Charles Edmund	Soph. A. & S.	San Francisco
Corvi, William P.	Soph. A. & S.	San Francisco
Cosgrove, Fred J.	Fr. A. & S.	San Francisco
Cosgrove, George	Soph. B. A.	Oakland
Cosso, Angelo John	Fr. B. A.	Alvarado
Cost, John Alan	Fr. A. & S.	Woodland
Cowell, James Pitman	Soph. B. A.	San José
Cristina, Vernon Joseph	Soph. A. & S.	San José
Cronin, Francis Joseph	Soph. A. & S.	Santa Clara
Cross, Lewis Leslie	Fr. A. & S.	Merced
Crowley, William Thomas	Soph. A. & S.	San Francisco
Cullen, Leo Charles	Soph. A. & S.	Gilroy
Cummins, Edward Bernard, Jr.	Soph. B. A.	San Francisco
Cuneo, Peter Joseph, Jr.	Fr. A. & S.	Bakersfield
Cunningham, Charles McDowell	Jun. A. & S.	San Mateo
Dailey, Robert H.	Soph. A. & S.	Los Angeles
Daly, Jack Francis	Soph. A. & S.	Eureka
Damico, Chester Enrico Ph. B., Santa Clara, 1932	III Law	Hayward
Danz, Fred Joseph	Jun. A. & S.	Redwood City
Darrow, Francis J.	Jun. A. & S.	Los Angeles
Davina, Albert Joseph	Jun. B. A.	Sunnyvale
Davis, John Alfred	Soph. A. & S.	San José
DeGasparis, Attilio Maurice	Fr. A. & S.	Guadalupe
de la Guardia, Augustín Alberto	Sen. C. E.	Oakland
de la Guardia, José Raul	Soph. A. & S.	Oakland
de la Guardia, Ricardo Alfonso	Sen. E. E.	Oakland
Delaney, Robert Rollin	Jun. A. & S.	San José
Delmas, Emery Joseph	Soph. A. & S.	San José
Del Mutolo, Oscar, Richard	Jun. A. & S.	San José
DeLuca, Harold Joseph Ph. B., Santa Clara, 1933	I Law	Menlo Park
DeMaestri, Fred Aldo	Fr. A. & S.	Burlingame
DeMarco, Albert Francis	Jun. A. & S.	San José
Den, Alfred Aloysius	Jun. A. & S.	Santa Barbara
Denser, William Anthony	Sen. A. & S.	San Francisco
DeRosa, Donald Manuel	Fr. A. & S.	Concord
DeWeese, Roger Erle	Jun. A. & S.	Klamath Falls, Oregon
Diebels, Joseph C.	Soph. A. & S.	San Francisco
Ditto, David Lawrence	Soph. A. & S.	San José
Doherty, Edward Joseph	Fr. A. & S.	San Francisco
Doherty, Eugene M.	Fr. A. & S.	San Francisco
Doherty, Frank Wilder	Soph. A. & S.	La Cañada
Doll, Louis Carl	Soph. A. & S.	Santa Clara
Donohoe, Patrick A.	Fr. A. & S.	San Francisco
Donohoe, Thomas M.	Fr. A. & S.	San Francisco
Dougherty, Francis M.	Soph. A. & S.	Los Angeles
Dougherty, Jack Francis	Sen. C. E.	Monterey
Dowd, James Alfred	Sen. A. & S.	San Francisco
Dowd, Louis J.	Fr. A. & S.	Rochester, New York
Dowd, Vilas George	Soph. A. & S.	Seattle, Washington
Dowd, Vincent John	Soph. A. & S.	Seattle, Washington

Doyle, John Edward	Fr. A. & S.	San Francisco
Doyle, Thomas Joseph	Fr. A. & S.	San Francisco
Duggan, John F.	Fr. A. & S.	San Francisco
Dunn, Walter Francis, Jr.	Soph. A. & S.	Monrovia
Durney, John Burke	Soph. B. A.	Alameda
Earley, Stephen B.	Fr. A. & S.	Madison, New Jersey
Eaton, Charles R.	Soph. A. & S.	Alameda
Eaton, John Smail	Sen. B. A.	Palo Alto
Eckman, Elden Frank	Soph. B. A.	Santa Rosa
Elliot, Clarence Francis	Soph. A. & S.	San Luis Obispo
Esswein, Leo John	Jun. A. & S.	Los Angeles
Ethen, Robert William	Soph. B. A.	Palo Alto
Fahey, George Eugene	Fr. B. A.	Oakdale
Falaschi, Nello Don	Fr. A. & S.	Los Gatos
Farasyn, Louis Marcel	Fr. A. & S.	Menlo Park
Fenton, Harry Stephen	Fr. A. & S.	Sacramento
Ferrario, Justo Peter	Fr. B. A.	Livermore
Ferro, Joseph John	Soph. B. A.	San Francisco
Ficken, James Malcolm	Fr. B. A.	San Francisco
Figone, George	Jun. B. A.	San Jose
Filippini, John Charles	Fr. A. & S.	San Francisco
Finn, Aloysius Gardner, Jr.	Fr. A. & S.	Santa Cruz
Finnegan, Darrell F.	Soph. A. & S.	Hollywood
Finney, Norman Whitfield	Fr. A. & S.	Piedmont
Fitzgerald, Thomas Gerald	Soph. A. & S.	Gilroy
Fleming, James E.	Fr. A. & S.	San Francisco
Fontaine, Pierre Anthony	Jun. A. & S.	Piedmont
Fowler, Robert Harold	Fr. B. A.	Los Gatos
Fox, Thomas James	Fr. A. & S.	Portland, Oregon
Fraters, Joaquin A.	Fr. A. & S.	Los Angeles
Freitas, Harold Joseph	Jun. B. A.	Santa Clara
Fretz, Paul Henry, Jr.	Jun. B. A.	Mountain View
Fuerst, George William	Fr. Engr.	San Francisco
Gagliardo, Andrew Donald	Sen. A. & S.	San Jose
Gallagher, John Joseph	Sen. A. & S.	Fresno
Gallagher, Paul Thomas A. B., Santa Clara, 1933	II Law	Tucson, Arizona
Galvin, Stephen Podesta	Jun. A. & S.	Merced
Garibotti, Angelo David	Jun. A. & S.	Hollister
Gaspar, William Joseph	Fr. B. A.	Mountain View
Gearin, Hugh Crane	Sen. A. & S.	Portland, Oregon
Geary, John Charles	Fr. A. & S.	Santa Clara
Geary, Joseph Matthew	Fr. A. & S.	Santa Clara
Genzoli, Arlin Carlo	Jun. A. & S.	Hughson
George, Francis John	Sen. M. E.	San Jose
Gerrard, Robert James	Fr. A. & S.	Redding
Giannini, Dante Henry Ph. B., Santa Clara, 1932	III Law	Santa Clara
Giannini, Peter Aloysius Ph. B., Santa Clara, 1931	III Law	Santa Clara
Gillick, Edward Andrew	Soph. A. & S.	Santa Clara

Gisler, Oscar Armin	Fr. B. A.	San Francisco
Giuntini, Hector Joseph	Sen. B. A.	San Francisco
Gjerdrum, Bernard Alexander	Jun. A. & S.	San Mateo
Gold, Martin Nicholas	Soph. A. & S.	Phoenix, Arizona
Golsong, William Bernard	Sen. A. & S.	Sacramento
Goodell, Ronald Mass	Soph. A. & S.	Oakland
Graham, Robert A.	Jun. A. & S.	San Francisco
Graham, Robert C.	Fr. A. & S.	San Francisco
Greefkens, Albert Lawrence	Fr. Engr.	San Francisco
Green, Harold Francis	Fr. A. & S.	Beverly Hills
Green, James Frederic	Sen. A. & S.	Beverly Hills
Green, William Dodson	Fr. A. & S.	Vallejo
Greiner, Emmett William	Soph. B. A.	Spokane, Washington
Gruye, Russell G.	Fr. A. & S.	Burbank
Guenther, Charles F.	Soph. A. & S.	Berkeley
Hagenah, Ralph Henry	Fr. Engr.	San Francisco
Hall, William Orren	Fr. A. & S.	San Luis Obispo
Hand, Bernard Philip	Fr. Engr.	Palo Alto
Handlery, Raymond Arthur	Sen. A. & S.	Vallejo
Hannon, Patrick Obed	Jun. A. & S.	San José
Hannon, Richard John	Sen. C. E.	Los Angeles
*Hargrove, Nelson Edward	Sen. M. E.	Santa Clara
Harp, William Richard	Jun. A. & S.	Lemoore
Harrington, Dominic J.	Soph. A. & S.	San Francisco
Harrington, Francis J.	Fr. A. & S.	San Francisco
Harris, Rex Francis	Sen. E. E.	San Francisco
Hartwig, Raymond Charles	Fr. A. & S.	San José
Harvey, Francis William	Soph. B. A.	San José
Harvey, John B.	Soph. A. & S.	San Francisco
Harvey, Thomas Norman, Jr.	Sen. M. E.	San José
Harwood, Jack William	Jun. E. E.	Santa Paula
Hasbrook, Stanley Stephen	Soph. A. & S.	San José
Hauck, Herman J.	Jun. A. & S.	Los Angeles
Haughian, Richard Michael	Soph. A. & S.	Seattle, Washington
Heflin, Clifford John	Fr. A. & S.	Fresno
Held, Robert Francis	Jun. A. & S.	Hollister
Helmstein, Homer James	Fr. A. & S.	Alameda
Hendrickson, Robert Mark	Soph. A. & S.	Corona
Henriques, Edwin Anthony	Fr. Engr.	Redding
Hermes, Richard Manning	Sen. E. E.	San Diego
Hertel, Charles J.	Soph. A. & S.	San José
Hickey, Jeremiah Griffin, Jr.	Jun. A. & S.	Rochester, New York
Hicks, James Ewing, Jr.	Fr. Engr.	Mountain View
Higgins, Glen Elred	Jun. A. & S.	Burbank
Hill, Thomas Kearney	Jun. A. & S.	Menlo Park
Hinch, John James	Soph. B. A.	Butte, Montana
Hinkle, Robert Kenneth	Jun. A. & S.	Esparto
Hinojosa, Francisco José	Jun. C. E.	San José
Hoey, John Bernard	Fr. A. & S.	Burlingame
Hogan, Harry Francis, Jr.	Fr. B. A.	San José
Hogan, James Daniel	Jun. A. & S.	Los Angeles
Holmes, Ellis Brainard	Sen. E. E.	San José

*Deceased January 6, 1934

Holmes, William Norris	Fr. A. & S.	Berkeley
Horton, Edward Joseph	Soph. A. & S.	Richmond
Hoye, Bart Edward	Sen. A. & S.	Auburn, Washington
Huesman, Joseph G.	Soph. A. & S.	Burbank
Hughes, Marion Burdis	Soph. Engr.	Camino
Hulsman, Lawrence Benedict	Sen. A. & S.	San José
Humphreys, Alexander J.	Fr. A. & S.	San Francisco
Hunt, Joseph Moody	Soph. A. & S.	Phoenix, Arizona
Huttlinger, Daniel Carrington	Fr. A. & S.	Los Altos
Hynes, John M.	Fr. A. & S.	San Francisco
Idiart, John Prosper	Sen. A. & S.	San Francisco
Ingersoll, Ernest J.	Fr. A. & S.	Los Angeles
Irving, Howard Sheldon	Soph. A. & S.	San Mateo
Jacobs, Pierre P.	Fr. A. & S.	San Francisco
Jennings, William Lewis	Fr. B. A.	Oakland
Johansing, Walter Bernard	Fr. Engr.	Pasadena
Johnson, Arthur Robert	Fr. B. A.	Guerneville
Jones, Stanton	Soph. B. A.	Bakersfield
Joseph, Marvin Anthony	Fr. A. & S.	Hanford
Judnich, Anton Paul	Sen. B. A.	San Francisco
Kaliski, Raymond	Jun. B. A.	Oakland
Kash, Anthony Joseph	Fr. A. & S.	Piedmont
Kaune, Robert William	Sen. A. & S.	Piedmont
Kavanagh, Charles J.	Fr. A. & S.	Los Angeles
Kehrlein, Oliver de F.	Jun. A. & S.	Oakland
Kelleher, Daniel J.	Jun. A. & S.	San Francisco
Kelly, Joseph Patrick	Sen. A. & S.	San Francisco
Kelly, Patrick J.	Jun. A. & S.	Santa Clara
Kennedy, Cyril Michael	Soph. B. A.	Watsonville
Kilkenny, Louis Christi	Fr. A. & S.	Vallejo
Kinerk, Harry Edward	Sen. E. E.	Seattle, Washington
Klement, William J.	Fr. A. & S.	Oakland
Klosterman, Richard Kemna	Fr. A. & S.	Portland, Oregon
Koepf, Ernest Edel	Jun. A. & S.	San Francisco
Kulwiecz, Anthony A.	Jun. A. & S.	Los Angeles
Ladd, Leonard Hiram	Sen. A. & S.	Hollister
Lafferty, Alexander J.	Fr. A. & S.	San Francisco
Leake, Paul Edward	Soph. B. A.	Woodland
Leal, Joseph Herbert	Special Law	San José
Lentz, Cyril Rudolph	Sen. C. E.	Yakima, Washington
Leslie, Richard Black	Sen. M. E.	Los Gatos
Lewis, Lincoln Charles	Soph. A. & S.	San Francisco
Lewis, Melvin George	Jun. E. E.	Santa Cruz
Lindsey, Bernard M.	Sen. C. E.	Merced
Litschi, Louis A.	Jun. A. & S.	Los Angeles
Litschi, Robert Paul	Fr. A. & S.	Los Angeles
Locicero, Frank Joseph	Fr. A. & S.	San José
Lomas, Woodrow Ernest	Soph. A. & S.	Santa Barbara
LoPresti, Michael P.	Jun. A. & S.	San Francisco
Lucchetti, John Augustine	II Law	Hollister

Lucy, George E.	Soph. A. & S.	San Francisco
Lydick, Philip Schneider	Jun. B. A.	Cordova, Alaska
Lynch, John Emmet	Sen. A. & S.	Butte, Montana
MacDonald, Alexander John, Jr.	Sen. E. E.	San José
MacDonald, Patrick Largey	Soph. A. & S.	Butte, Montana
MacDonald, Thomas Rex	Fr. B. A.	San José
Madden, Robert James	Soph. A. & S.	Santa Clara
Magill, Carson James	Fr. A. & S.	Vallejo
Maginnis, Jess Arthur	Sen. A. & S.	Sunnyvale
Maginnis, Tim F.	Jun. C. E.	Marshfield, Oregon
Mahoney, Frank William	Sen. B. A.	Tulare
Maino, Theodore C.	Jun. C. E.	San Luis Obispo
Marshall, Theodore J.	Fr. A. & S.	San Francisco
Marten, John Francis	Soph. A. & S.	San José
Martin, Norman Francis	Fr. B. A.	Burlingame
Mautz, Joseph Lawrence	Sen. A. & S.	Los Angeles
McCarthy, Charles J.	Jun. A. & S.	San Francisco
McCarthy, George Francis, Jr.	Fr. A. & S.	Pueblo, Colorado
McCormick, Richard Anthony	Soph. A. & S.	Santa Clara
McCoy, Arthur Wesley	Sen. B. A.	Alameda
McCusker, Owen John	Fr. A. & S.	San Francisco
McDonald, William James	Soph. A. & S.	Stockton
McGee, Robert Joseph	Fr. A. & S.	San Francisco
McGloin, John	Jun. A. & S.	San Francisco
McGrath, Neal William	Soph. B. A.	San Francisco
McGuire, Robert Cyril	Fr. A. & S.	San José
McIntosh, William J.	Soph. A. & S.	San Francisco
McKenna, Fred William	Sen. E. E.	San José
McLaughlin, Jerome Morley	Sen. A. & S.	Sacramento
McPherson, David Harold	Soph. A. & S.	Sonora
McShane, Edward D.	Fr. A. & S.	San Francisco
McSweeney, Jeremiah	Sen. M. E.	San Francisco
MeVeigh, James Patrick	Sen. A. & S.	San Francisco
Meagher, Richard B.	Jun. A. & S.	Portland, Oregon
Medeiros, Chris Raymond	Fr. B. A.	Oakland
Mehren, Bernard Walsh	Soph. A. & S.	Chicago, Illinois
Melanson, Charles Hector	Soph. B. A.	San Diego
Mercer, Maurice Escolle	Jun. A. & S.	Mountain View
Mieuli, John Peter, Jr.	Fr. B. A.	San José
Mitchell, Edmund Allman Burke	Soph. A. & S.	San José
Mitchell, Lionel Wenceslaus	Soph. B. A.	Santa Barbara
Moholy, John R.	Soph. A. & S.	San Francisco
Moore, Albert William	Soph. B. A.	Los Angeles
Morey, Warren Stephen	Sen. A. & S.	Menlo Park
Morgan, Albert Hugh	Soph. A. & S.	Rialto
Moroney, Thomas Carl	Sen. A. & S.	San Mateo
Morris, Brougham Joseph	Sen. A. & S.	San Francisco
Morris, Fred Joseph	Sen. B. A.	San Francisco
Morton, Richard Wallace	Fr. A. & S.	Campbell
Mouat, William Gordon	Soph. A. & S.	Palo Alto
Mullin, John Thomas	Soph. Engr.	Palo Alto
Murphy, Edward J.	Soph. A. & S.	San Francisco
Murphy, Frank Joseph	Fr. A. & S.	Los Angeles

Murphy, John A.	Jun. A. & S.	San Francisco
Murphy, John Aloysius	Fr. B. A.	San José
Murphy, Morris V.	Fr. A. & S.	San Francisco
Murray, Herbert J.	Fr. A. & S.	San Francisco
Murray, J. Walshe	Fr. A. & S.	San Francisco
Myer, Glen Anthony	Sen. A. & S.	Cupertino
Nagel, Franz Davenport	Fr. Engr.	San Mateo
Nagel, Jack D'Arcy	Soph. B. A.	San Mateo
Naumes, William Joseph	Sen. B. A.	Medford, Oregon
Navarra, Dominic Joseph	Sen. A. & S., I Law	San José
Nelson, Stanley Hansen	Soph. A. & S.	San Luis Obispo
Newlin, Albert Joseph	Gr. A. & S.	Santa Clara
B. S., Santa Clara, 1913, LL. B. 1914, J. D. 1916		
Nichols, Robert	Fr. Engr.	Los Gatos
Nicholson, Wilmot Joseph	Soph. Engr.	San José
Noriega, Albert Leo	Sen. A. & S.	Bakersfield
Normandin, Clair Adrian	Soph. Engr.	San Jose
Oblizalo, John	Fr. B. A.	Butte, Montana
O'Brien, Jerome John	Jun. E. E.	Venice
O'Brien, Robert Ruane	Fr. Engr.	Watsonville
O'Connell, Adrian Earl	Soph. A. & S.	San José
O'Connell, John J.	Soph. A. & S.	Alameda
O'Donnell, Vincent Francis	Jun. A. & S.	Glendale
Odou, John E.	Soph. A. & S.	Santa Monica
O'Gara, Donald B.	Fr. A. & S.	San Francisco
O'Hara, Jack Anthony	Jun. A. & S.	San Francisco
O'Hara, James Vincent	Fr. A. & S.	Vallejo
O'Hara, Paul Edward	Fr. B. A.	Vallejo
Oliger, Phillip J.	Fr. A. & S.	Newark, New Jersey
O'Malley, James Charles	Sen. A. & S.	Phoenix, Arizona
O'Meara, Vernon Henry	Jun. B. A.	San José
O'Reilly, Timothy Ignatius	Jun. A. & S.	San Luis Obispo
Oreña, Arthur Gaspar	Fr. A. & S.	San José
O'Rourke, Richard A.	Soph. A. & S.	San Francisco
O'Rourke, Thomas E.	Fr. A. & S.	Los Angeles
Osmer, John Carlisle	Sen. B. A.	Salinas
Ospina, Eduardo	Sen. C. E.	Cali, Colombia
Ospina, Jorge Tomás	Fr. Engrg.	Cali, Colombia
O'Sullivan, Vincent B.	Jun. A. & S.	Los Angeles
O'Toole, William R.	Soph. A. & S.	San Francisco
Otten, John Peter	Soph. A. & S.	San Francisco
Owens, John G.	Soph. A. & S.	San Francisco
Paganini, Charles Edward	Sen. B. A.	San Francisco
Paganini, Frank Leo	Fr. A. & S.	San Francisco
Paglia, Joseph Paul	Sen. A. & S.	Black Diamond, Wash.
Parrish, Francis J.	Jun. A. & S.	Los Angeles
Paslaqua, Jack Edward	Jun. A. & S.	San José
Pasquinelli, Louis Joseph	Sen. A. & S., II Law	Santa Clara
Patz, William Thomas	Sen. A. & S.	La Jolla
Pelfini, Rinaldo Fred	Fr. B. A.	San Francisco
Peré, Frank John	Fr. A. & S.	Chualar

Perier, Claude Henry	Sen. Ch. E.	Los Angeles
Perkins, Chris James	Fr. A. & S.	Alviso
Picetti, Louis Fulton	Jun. A. & S.	Hollister
Pierce, Guy Elsworth	Sen. C. E.	San Francisco
Pifer, John Lenior	Fr. B. A.	Olympia, Washington
Pisano, Rocci George	Sen. A. & S.	San José
Pociask, Joseph J.	Soph. A. & S.	Los Angeles
Pohley, Joseph G.	Soph. A. & S.	San Francisco
Polomik, Edward Everett	Jun. Ch. E.	Sunnyvale
Poole, Starr	Soph. A. & S.	Yuba City
Prein, Joseph Hermes	Jun. E. E.	Menlo Park
Prudhomme, Edward Louis James	Fr. Engr.	Santa Clara
Quinn, Joseph Robert	Soph. B. A.	San José
Radunich, Nicholas Francis	Fr. A. & S.	San José
Ramos, Leland Stanley	Soph A. & S.	Hayward
Ray, Morris Warren	Jun. A. & S.	San Luis Obispo
Regan, Timothy Dalton	Fr. A. & S.	Boise, Idaho
Rendler, Eugene Lloyd	II Law	San José
Richard, Henry John, Jr.	Fr. B. A.	Alviso
Richards, Robert Henry	Sen. A. & S.	Bishop
Riehl, George Adam	Soph. A. & S.	San Francisco
Robinson, George Leo, Jr.	Soph. B. A.	San Francisco
Robinson, Leslie Somers	Fr. A. & S.	Palo Alto
Robinson, William R.	Fr. A. & S.	San Francisco
Rodgers, Lionel Anthony	Fr. A. & S.	Vallejo
Rogers, James Patrick	Sen. A. & S.	San Francisco
Rohe, Robert Anthony	Soph. A. & S.	Los Angeles
Rolandi, Frederick Sereno	Jun. C. E.	San Francisco
Roll, Paul Melvin	Jun. A. & S.	San José
Rooney, James F.	Soph. A. & S.	San Francisco
Rossi, Harold Josephy	Fr. A. & S.	Oakland
Rosswog, Karl Michael	Sen. B. A.	Cordova, Alaska
Ruffo, Albert John B. E. E., Santa Clara, 1931	I Law	Tacoma, Washington
Ruiz, Joseph Frank	Soph. A. & S.	San José
Ryan, William D.	Fr. A. & S.	Santa Barbara
Ryle, Gerald Joseph	Jun. B. A.	Sacramento
Salatino, Joseph Robert	Jun. A. & S.	Tacoma, Washington
Salvadorini, Vasco	Fr. A. & S.	Centerville
Samarzich, Warren Nicholas	Soph. Engr.	San Francisco
Sanfilippo, Philip Salvatore	Fr. A. & S.	San José
Sausotte, Francis P.	Fr. A. & S.	San Francisco
Savage, Thomas V.	Fr. A. & S.	Phoenix, Arizona
Schick, Floyd Jr.	Fr. A. & S.	Seattle, Washington
Schmidt, Richard Max	Jun. A. & S.	Redwood City
Schmidt, Walter E.	Jun. A. & S.	San Francisco
Schnerr, Edward Thomas	Sen. B. A.	Los Gatos
Scott, George Walter	Fr. A. & S.	Los Altos
Secondo, Stanley James	Fr. B. A.	Watsonville
Selhorst, Henry H.	Fr. A. & S.	Los Angeles
Seramin, Harold Alexander	Fr. A. & S.	San Francisco

Sheehy, John Edward	Sen. C. E.	Watsonville
Shenk, Jay L.	Fr. A. & S.	Los Angeles
Shicora, George Stephen	Soph. B. A.	Palo Alto
Silva, Edward Joseph	Jun. B. A.	Mountain View
Simonetta, Frederick Robert	Soph. Engr.	San Francisco
Slack, Austin Bruce	Jun. A. & S.	Pasadena
Smith, Carl Henry	Fr. A. & S.	Boise, Idaho
Smith, Frank Warren	Fr. A. & S.	San Luis Obispo
Smith, Sidney Vernon	Soph. A. & S.	Los Banos
Snyder, Holbrook	Fr. Engr.	San José
Sobrero, Frank Cæsar	Jun. B. A.	Oakland
Souza, Irving A.	Fr. A. & S.	San José
Spadefore, Louis Joseph	Jun. A. & S.	Tacoma, Washington
Spaich, Milos Gus	Sen. B. A.	Saratoga
Sparolini, Francis Joseph	Sen. B. A.	Monterey
Spohn, Richard D.	Fr. A. & S.	San Francisco
Stafford, Paul Jordan	Soph. Engr.	Ferndale
Stanley, Edward Glynn	Jun. A. & S.	Vallejo
Stearns, Irving Roger	Fr. Engr.	Portland, Oregon
Stepovich, George James Ph. B., Santa Clara, 1933	II Law	San José
Stojanovich, John Robert	Jun. B. A.	Campbell
St. Sure, Donald F.	Jun. A. & S.	San Francisco
Sullivan, Albert Gifford	Fr. A. & S.	San José
Sullivan, Joseph Aloysius	Soph. A. & S.	Menlo Park
Sullivan, William Richard	Soph. A. & S.	San Anselmo
Svoboda, Harold August	Soph. Engr.	Los Angeles
Sweeney, John Daniel	Fr. A. & S.	San Francisco
Tassi, Roy Anthony	Jun. E. E.	San José
Taylor, Wayne Elvis	Soph. Engr.	Montesano, Washington
Teague, James Delmar	Fr. A. & S.	Alameda
Thiercof, Raymond Joseph	Soph. B. A.	Los Banos
Thissen, Eugene Renier	Sen. A. & S.	Boise, Idaho
Thomas, Henry Arthur Louis	Fr. A. & S.	Selby
Thomas, Vincent Ph. B., Santa Clara, 1932	II Law	San Pedro
Thompson, Robert Roy Henry	Sen. C. E.	San José
Thornton, James E.	Soph. A. & S.	Los Gatos
Thornton, John Riley	Jun. E. E.	Livermore
Thornton, Robert Thomas	Fr. Engr.	Livermore
Thrift, Richard Gibson	Sen. A. & S.	San José
Tichenor, Ralph R.	Fr. A. & S.	San Francisco
Tinney, Malcolm James	Soph. A. & S.	Placerville
Tobin, William J.	Soph. A. & S.	San Francisco
Toffelmier, Bruce Cormack	III Law Special	San José
Tognazzini, Harold Samuel	Soph. B. A.	San Luis Obispo
Toner, Eugene E.	Jun. A. & S.	Santa Clara
Tuite, Thomas Joseph B. S., Santa Clara, 1933	III Law	Redwood City
Twigg, Alfred Timothy	Jun. A. & S.	San José
Typaldos, Aristides Gabriel	Soph. B. A.	Oakland
Urresti, Gus Juan	Fr. A. & S.	Boise, Idaho

Vallarino, Aquilino Antonio	Fr. Engr.	Panama, Panama
Vargas, Marshall John	Soph. B. A.	San José
Vasconcellos, William Sebastian	Soph. A. & S.	Santa Clara
Victor, Michael, Jr.	Sen. E. E.	Hilo, Hawaii
Vivaldo, Chester Domenic	Soph. A. & S.	San Francisco
Vizzard, John A.	Fr. A. & S.	San Francisco
Vizzolini, Harry Joseph	Jun. A. & S.	Santa Barbara
Von der Ahe, Karl E.	Jun. A. & S.	Los Angeles
Von Tobel, Edward John	Jun. B. A.	Las Vegas, Nevada
Vukota, Francis William	Fr. A. & S.	Livermore
Wall, William D'Oyley, Jr.	Fr. B. A.	San José
*Wanz, John David	Sen. M. E.	San Francisco
Ward, Adrian Lawrence	Fr. B. A.	Menlo Park
Ward, Randall Louis	Soph. A. & S.	San Francisco
Ward, Robert William	Gr. A. & S.	Santa Clara
B. S., St. Ignatius College, 1928		
Waters, John Lloyd	Soph. Engr.	San Andreas
Welch, Garrett James	Jun. A. & S.	San Francisco
Werts, L. Clyde	Jun. A. & S.	Los Angeles
White, Robert Francis	Jun. E. E.	Monterey
Wienholz, Arthur Nicholas	Sen. A. & S.	San Francisco
Wilbur, James Justin	Soph. Engr.	San José
Wilcox, Charles Francis	II Law	Santa Clara
A. B., Santa Clara, 1933		
Williams, Vincent Francis	Fr. A. & S.	Santa Cruz
Wilson, Russell	Soph. A. & S.	Los Angeles
Winship, John Bruce	Sen. A. & S.	San Mateo
Winters, Charles Walter	Fr. A. & S.	Boise, Idaho
Wright, Malcolm Dunning	Soph. A. & S.	Coronado
Zingheim, Francis Eugene	Jun. A. & S.	San José
Zolezzi, Gene Richard	Soph. A. & S.	San José

*Deceased January 6, 1934